BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 30 1939

THE PAINFUL SHOULDER *

BY

PHILIP D. WILSON, M.D.

New York City

(WITH SPECIAL PLATE)

Shoulder pain may be due to a host of causes, and in order to transfer the discussion of this subject from an abstract to a specific basis I submit the following analysis of diagnoses from 168 personally studied cases seen during the last five years. This list is presented with due apology for its shortcomings and with the full knowledge that it represents nothing more than the experience of an individual surgeon. Its only merit lies in the fact that it includes all patients seen during this period who complained primarily of the shoulder, and that it gives an indication of the variety of conditions that must be included in the differential diagnosis.

TABLE I.—*Showing Analysis of Diagnoses of 168 Personally Studied Cases of Shoulder Pain*

	No. of Individual Lesions	Totals for Different Groups
I. Region of shoulder:		
(A) Lesions of subacromial bursa		89
1. Calcifying tendinitis	25	
2. Periarticular adhesions	36	
3. Rupture of supraspinatus or associated tendons	11	
4. Undifferentiated non-traumatic lesions	7	
5. Traumatic lesions of uncertain nature	10	
(B) Lesions of biceps tendon		5
1. Rupture, long head	2	
2. Probable dislocation of bicipital tendon	3	
(C) Lesions of bones		16
1. Lesions of upper part of humerus:		
(*a*) Osteomyelitis	1	
(*b*) Tumour (fibrocystic disease)	1	
(*c*) Fracture of surgical neck	10	
2. Lesions of clavicle:		
(*a*) Fracture	1	
(*b*) Pseudarthrosis	2	
3. Lesions of acromion:		
(*a*) Congenital deformity	1	
(D) Lesions of shoulder-joint		27
(*a*) Dislocation (acute)	4	
(*b*) Fracture-dislocation (old)	5	
(*c*) Recurrent dislocation	8	
(*d*) Congenital posterior subluxation	1	
(*e*) Tuberculous arthritis	3	
(*f*) Rheumatoid arthritis	5	
(*g*) Old suppurative arthritis	1	
(E) Lesions of acromio-clavicular joint		10
1. Subluxation	4	
2. Dislocation	3	
3. Osteo-arthritis	2	
4. Probable infectious process	1	
(F) Myositis ossificans, pectoral muscles	1	
(G) Thrombosis, axillary veins	1	
II. Region of scapula:		
(A) Exostosis	1	
(B) Infrascapular bursitis or myositis	1	
III. Region of cervical spine:		
(A) Osteo-arthritis	2	
(B) Metastatic carcinoma	2	
(C) Congenital abnormality of transverse process: first dorsal	2	
(D) Cervical rib	1	
(E) Scalenus syndrome	2	
IV. Neurological lesions:		
(A) Brachial plexus injury	2	
(B) Spinal accessory paralysis	2	
(C) Anterior serratus paralysis	1	
V. Thoracic lesions:		
(A) Pneumothorax (pulmonary tuberculosis)	1	
(B) Pulmonary neoplasm	1	
(C) Coronary thrombosis	1	

Study of this table shows that lesions of the subacromial bursa accounted for eighty-nine, or 53 per cent., of the 168 cases. The other pathological lesions occurred in a scattered manner, with the exception of the fractures and dislocations, which were included only for the sake of completeness. In the space at my disposal I cannot attempt to consider all the various causes of shoulder pain; consequently attention will be devoted only to the more common ones.

Lesions involving Subacromial Bursa

Some objection may be made to the differentiation of lesions causing shoulder pain on the basis of whether or not they involve the subacromial bursa, and it may be claimed that a better classification could be obtained upon a pathological basis. The exact nature of several of the pathological processes is, however, obscure, and it seems to me that they can be best understood in relation to the anatomy and function of the subacromial bursa.

This bursa serves to remove friction and to permit the greater tuberosity of the humerus to rotate inwards under the acromion process in movements of abduction and rotation of the shoulder. It is a synovial sac about one and a half inches in diameter whose base is fixed to the superior capsule of the shoulder-joint and to the greater tuberosity of the humerus, and its roof to the proximal portion of the deltoid muscle, the coraco-acromial ligament, and the acromion process. The peripheral portions of the bursa are loose and redundant, and thus permit the floor of the bursa to glide under the roof during

* Read in opening a discussion in the Section of Orthopaedics and Fractures at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

the different movements of the shoulder. Normally the layers of the bursa are approximated, but enough fluid is secreted to keep them moist and lubricated. When the two layers become adherent movement of the shoulder is greatly restricted (Fig. A).

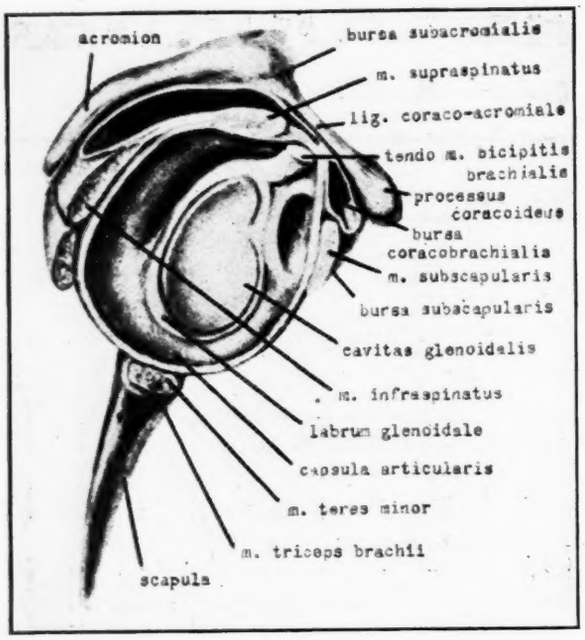


FIG. A.—Specimen showing relations of subacromial bursa, capsulo-tendinous cuff, and shoulder-joint after removal of humerus.

Inflammation of the subacromial bursa occurs practically always as a consequence of a lesion involving neighbouring structures. Codman (1934) states: "I now feel that an attempt to describe bursitis as an entity would be equivalent to attempting to describe peritonitis as an entity. It is not a structure where disease starts, so much as a structure which limits disease in the adjacent structures by temporary adhesions causing fixation of the parts." Just as it would be a mistake to-day to make a diagnosis of generalized peritonitis without attempting to describe its cause, so it would be a mistake to make a diagnosis of subacromial bursitis without first defining its origin.

In the subacromial bursa the source of most of the pathological changes is the structure forming the larger part of its floor. This is variously designated as the superior capsule of the joint, the supraspinatus tendon, and the musculo-tendinous cuff. It is in reality a composite structure made up of the short flat tendons of the subscapularis, supraspinatus, infraspinatus, and teres minor muscles, which blend with the capsular ligament and with each other at a point about one inch proximal to their bony insertions to form a conjoined tendinous and capsular cuff whose fibres are indistinguishable from each other. Again I quote from Codman, who says: "I may summarize by saying that owing to the peculiar mechanics of the shoulder the avascular and inert supraspinatus tendon is the most vulnerable part of the joint, and that inflammation in it is apt to be painless until the adjacent subacromial bursa is involved, which, being abundantly supplied with vessels and nerves, produces the symptoms of which the patient complains." It should be pointed out, further, that, owing to the relatively unstable architectural arrangement of the shoulder-joint with its large humeral head and small glenoid cavity, this tendino-capsular cuff is called upon to bear a great deal of strain and is exposed to injury either from repeated minor insults in daily use or a single more serious trauma. Meyer (1931) pointed out the high frequency of attritional changes involving the tendino-capsular cuff and long tendon of the biceps found upon routine examination of many cadavers. It is probable that these changes play a large part in the genesis of many painful lesions of the shoulder.

The more common lesions involving the subacromial bursa are the following: (1) calcareous deposits (calcifying tendinitis); (2) periarticular adhesions (tendinitis); (3) rupture of supraspinatus tendon.

Calcareous Deposits (Calcifying Tendinitis)

There seems to be much confusion in respect to the part played by calcareous deposits in causing shoulder pain. This is doubtless due to the fact that calcification in the shoulder is not infrequently revealed by *x*-ray examination when the patient is completely free from any complaints in this region. Indeed, in the case of a patient complaining of a painful shoulder the *x*-ray examination of the normal side may show an even larger calcified mass than on the affected side. Again, there is an extreme variability in the severity of the symptoms which may be difficult to understand unless one has had the opportunity of exposing these lesions by operation and of observing at first hand the differences in the pathological appearance.

The deposits almost invariably originate in the tendino-capsular structure, and although they may be seen in the subscapularis, infraspinatus, or any other location, the favourite situation is in the supraspinatus tendon close to its point of insertion. Elmslie (1932) reported finding the calcareous material in a cavity in the greater tuberosity in three cases, but this is unusual. The characteristics of the deposits vary. Sometimes they may be found as uncoalesced collections of dry, gritty, sand-like particles without any surrounding hyperaemia (Plate, Fig. 1), and at others as confluent cavities filled with soft greyish material having much the same consistency as tooth-paste and surrounded by zones of intense inflammatory reaction (Plate, Fig. 2). On some occasions in order to remove them it is necessary to excise the entire diseased portion of the tissue, on others only to prick the roof of the cavity and drain it like an abscess. Chemical analysis of the material has been made and the results reported by many observers, including Moschcowitz (1915), Codman (1934), and Elmslie (1932). The examination of material removed from several of my own cases agreed substantially with theirs. It is composed chiefly of calcium phosphate and calcium carbonate in non-crystalline form. In a case recorded by Codman calcium oxalate was present, but this substance was not reported by others. On microscopical examination the material is seen to consist of small ovoid colourless bodies of variable size, exhibiting a marked Brownian movement. It is insoluble in alcohol and ether. The murexide test for uric acid is negative. The Liebermann-Burchard test for cholesterol is sometimes positive and sometimes negative.

All cultures made from these deposits, including both those reported by others and those in my own cases, have proved negative. There is no scientific evidence, therefore, to support the contention that the deposits are of infectious origin. Similar deposits have occasionally been found in other regions of the body, particularly in and about the tendinous attachments of the gluteus medius and minimus muscles, the flexors carpi ulnaris and radialis

muscles, and the tendo Achillis. Worthy of note is the observation that all of these structures have the common characteristic of being dense fibrous tissues with slight, if any, vascularity.

Method of Deposit Formation

Microscopical examination of different specimens shows that the deposit is first laid down in small punctate areas deep in the tendinous fibres. Gradually these enlarge, coalesce, and work their way to the surface of the tendon. Milgram (1939) recently called attention to the occurrence of large round cells in the tendon whose cytoplasm gradually became swollen and lost its staining properties. This change seemed to be followed by precipitation of calcium —at first in the periphery of the cell, but gradually spreading until the entire cell became calcified. Whether these were cells of the wandering type or connective-tissue cells that had undergone pathological change had not yet been determined. Reasoning from what is known of calcifying processes in other structures, and particularly in the walls of blood vessels, the most tenable theory would seem to be to regard these deposits as the result of degenerative changes in dense avascular fibrous tissue not unlike that seen in arteriosclerosis. Attrition rather than injury would seem to play the principal part, but the process can probably be best described as a calcifying tendinitis.

Symptoms of Calcifying Tendinitis

Whether or not the deposit gives rise to painful symptoms would seem to depend upon its having enlarged sufficiently to approach the tissue layer beneath the bursal wall, which, being richly supplied with vessels and nerves, is capable of reacting in the usual inflammatory manner and of transmitting painful stimuli. Inflammatory reaction may result in absorption of the deposit, or in certain instances the material may actually rupture into the bursal cavity, where it sets up an intense but usually short-lived inflammation, finally resulting in absorption. When the deposit lies deep in the tendinous structure it causes no symptoms. As it enlarges the overlying tissues become thinned and it causes a localized hyperaemia or swelling. At this stage the patient will begin to complain of a painful catch in the shoulder on certain movements, usually those of abduction and external rotation, in which the painful area is compressed between the greater tuberosity and the acromion process. Other motions are free and painless. *X*-ray examination will usually reveal a small rather discrete calcareous deposit, lying as a rule in the region of the supraspinatus tendon close to the greater tuberosity, but it is to be emphasized that there is more variation in the anatomic location than generally supposed. This is the subacute stage, and it may persist for many months with slight, if any, change.

Other patients with or without previous shoulder symptoms of the subacute type may be awakened in the middle of the night with acute pain, which very quickly becomes excruciating. Such patients show extreme apprehension of the slightest movement of the shoulder and are unable to co-operate upon examination. It may appear hot and slightly swollen, and is exquisitely tender upon palpation. There may be a slight elevation of temperature and a moderate leucocytosis. The *x*-ray examination at this time will often reveal a mass of calcareous matter filling the bursal cavity and sometimes extending downwards over the greater tuberosity. Large doses of morphine may be necessary in order to give relief. This is the acute stage.

I have had the opportunity of observing the actual pathological condition in several of these acute shoulders at operation. In two cases there had occurred a rupture of the calcareous matter into the bursal cavity. The bursal wall was congested, and upon opening the sac it was found to be filled with fluid containing white calcareous substance and fibrin. After removing this substance a small cavity could be seen in the floor of the bursa from which it had escaped. In other cases the bursal wall was found reddened and adherent over the deposit, and upon puncturing these tissues the calcareous matter spurted out in a liquefied state with much the same appearance as pus escaping from an abscess cavity.

Treatment of Calcifying Tendinitis

Formerly the only alternatives in the treatment of calcifying tendinitis were rest and physical therapy or surgical excision. Of the various physical agencies that have been tried the most benefit has been obtained from properly administered diathermy. I have seen demonstrated many cases in which complete relief of symptoms and disappearance of the deposits upon *x*-ray examination had followed promptly after a series of such treatments (Titus, 1929). In contrast, I have seen similar cases in which no improvement was obtained by this method. I have also observed patients in whom the symptoms were relieved and the deposits disappeared without any treatment other than rest. I am therefore unable as yet to accept the claims of benefit from diathermy as fully proved.

The results of surgical excision of the deposits are definite, and the relief conferred upon patients with the acute type of symptoms is so immediate and great that there is much to recommend it. On the other hand, with the subacute type of symptoms few patients are sufficiently disabled to be willing to undergo even this mild procedure. Particularly is this so in the case of women, to whom the thought of a disfiguring scar is objectionable.

Fortunately we now have the method of aspiration and irrigation by needle to accomplish the same result as by operation, only with less trauma (Plate, Figs. 3 and 4). Porritt (1931) was one of the first to indicate the usefulness of this method, but Patterson and Darrach (1937) published the most comprehensive series of cases. They used two needles, one inserted from the anterior aspect and the other from the lateral aspect directly into the deposit. Salt solution was forced in by syringe through one needle and allowed to escape through the other. They made no claims for complete removal of the deposits by this method, although that result was achieved in a few instances. They did state, however, that pain was relieved and function restored, either immediately or within a few days, and that absorption of the calcareous matter followed within a period of a few weeks (Table II).

TABLE II.—*Showing a Summary of Cases treated by Irrigation (By courtesy of Dr. R. L. Patterson)*

Treated by irrigation		63
Acute (seven days or under)	48	
Subacute (under one month)	8	
Chronic (over one month)	7	
Histories of previous attacks		17
Roentgenograms showed calcium shadows		48
Average period of economic disability:		
Acute	4.8 days	
Subacute	7.0 „	
Chronic (when relieved)	10.14 „	
Results:		
Complete relief of symptoms		57
Infections		0
Limited motion in shoulder		2
Operation necessary after irrigation		2
Pain and limited motion still present		2

NOTE.—Only one of the six cases included in the last three groups was acute.

I have had the opportunity of observing the results obtained by Patterson in many cases treated by this method at the Hospital for the Ruptured and Crippled, and am in a position fully to confirm his earlier conclusions. I have also employed this method of treatment in some of my own cases. In the acute cases the relief that may be obtained is striking, and it is a cause for gratification that we now have at our command a method that is capable of affording immediate, and generally permanent, relief from such severe pain. Failures result in a few cases when one has been unsuccessful in reaching the calcareous deposits with the needle, but the procedure should then be repeated, employing *x*-ray localization in order to guide the needles. Recently Milgram (1939) stated that it was unnecessary to employ saline irrigation, and that he had obtained just as good results by direct needling and aspiration. He believed that the essential factor was to puncture the deposit and open channels through which capillaries might penetrate, a process that would be followed by absorption.

Relief may also be obtained by puncture and irrigation in the subacute cases. All depends upon being able to reach the deposit, and greater skill comes with greater experience. Accurate localization of the deposit by preliminary *x*-ray examination in two planes is necessary. In a few cases deposits of dense, almost bone-like, consistency may be encountered which do not respond to this method of treatment. In such cases operative excision may still remain the procedure of choice.

Reviewing the twenty-five cases of calcifying tendinitis that occurred in the series, I find a preponderance of the male sex, which accounted for sixteen, or 64 per cent. In respect to age, the peak of the incidence was 46 to 50 years, with almost as many in the 41–45 year and 51–55 year periods (Fig. B). There was practically an even

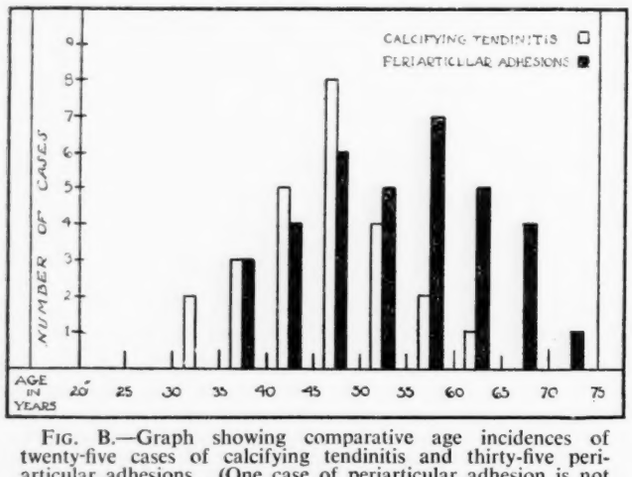


FIG. B.—Graph showing comparative age incidences of twenty-five cases of calcifying tendinitis and thirty-five periarticular adhesions. (One case of periarticular adhesion is not included, as the patient's age was not obtainable.)

distribution between the left and right sides, with three bilateral cases. Nine cases were classified as acute and sixteen as subacute. Of the acute cases three were treated by operation, three by needling and irrigation, and the remainder by immobilization with sling and circular bandage and by local heat. All recovered within a period of seven to ten days, but those treated by puncture and irrigation made the most rapid and spectacular improvement. Of the sixteen subacute cases three were treated by puncture and irrigation with relief, two by diathermy, and the remainder expectantly, since their symptoms were minimal and did not cause disability. The final results in these cases are unknown.

Periarticular Adhesions (Tendinitis)

Periarticular adhesions account for even more cases of shoulder pain than do calcareous deposits. In my group of cases they numbered thirty-six, compared with twenty-five of the latter. The age incidence appeared to be a little older, as may be seen from a glance at the graph, although this observation is not confirmed by the figures given by Codman (1934). The males outnumbered the females twenty to sixteen. The left shoulder was affected twenty-one times, the right seventeen times, and in two cases the condition was bilateral.

Little is known of the exact pathological process, and the nature of the condition can only be deduced from the clinical evidence. The symptomatology is so characteristic, however, that there can be no doubt that we are dealing with a separate disease entity. The patient is not usually seen until the condition is already well established. He generally gives a history of having noticed a slight painful catch in the region of the shoulder and upper arm for a period of several months. Gradually he has become aware of an inability to perform certain tasks or to participate in certain sports because of stiffness in the arm. Night pain, often awakening him after he has fallen asleep, is a common complaint. Frequently it radiates down the arm to the hand, but without being localized to any nerve distribution.

Physical examination fails to reveal any swelling or definite point of local tenderness, although there may be generalized sensitiveness about the shoulder. Tests of movement, however, invariably show marked restriction of both active and passive abduction and of rotation. If the shoulder girdle be fixed in order to limit the motion to the scapulo-humeral joint the range of abduction may not exceed 35 to 45 degrees. When one forces the movement pain is elicited. The *x*-ray examination is usually quite negative, although in a few of my cases several flecks of calcium deposit were shown. In addition we know that when this condition is treated by forcible manipulation, as advocated by Sir Robert Jones and others, there occurs a loud sound of snapping adhesions, followed immediately by a complete freeing of the shoulder movements. From this and the negative *x*-ray findings the condition has been ascribed to the formation of adhesions about the joint. No evidence of arthritis has been found. Where these adhesions are located has never been definitely discovered. I have operated upon several patients with this condition and explored the subacromial bursa, with rather disappointing findings. In only one case was the bursa obliterated by adhesions. In two cases the appearance of the bursa was fairly normal, although it seemed small, and there may have been adhesions at the redundant free edges. In one other case the bursa appeared normal, but the tendino-capsular cuff lying beneath it was of a uniform red colour, indicating an extensive hyperaemia, and I am led to believe that this was an early case with the inflammatory process still present and active. Codman has reported similar findings. With my finger in the bursa I manipulated three of these shoulders and felt the snapping of adhesions in the capsular structure beneath my finger and anteriorly in the region of the subscapularis tendon.

I am of the opinion, therefore, that the adhesions lie in the substance of the tendino-capsular structure, whence they may extend, to involve either the underlying or the overlying tissues. The process probably starts as a tendinitis, which subsides, leaving a thickened inelastic capsule adherent beneath to the edges of the articular

cartilage and above to the adjacent soft tissues. As to whether this tendinitis is a true inflammatory process due to low-grade infection as suggested by Dickson and Crosby (1932) or whether it is still another manifestation of the attritional and degenerative changes to which this structure is particularly liable I have no direct evidence. I can say, however, that most of the cases treated by me have recovered without any particular attention to foci of infection and that their recovery time compares favourably with that of the cases reported by Dickson and Crosby, in which all infectious foci were eradicated.

Treatment of Primary Tendinitis

In respect of treatment, it should be emphasized that by no means all of the cases of stiff or frozen shoulder are due to primary tendinitis. Many, according to the history, are clearly due to adhesive processes secondary to injury of the soft structures or to calcifying tendinitis. This differentiation is important, because the secondary cases respond well to local heat, massage, and active and passive movement, whereas in the primary cases this treatment is generally ineffective.

In discussing the subject of primary adhesive tendinitis Codman maintains that it is a self-limited disease and that all cases finally recover, with or without treatment. He is inclined to explain this to the patient and to leave the decision to him as to whether or not he will undertake treatment. While it is probably true that many of the patients will eventually recover without treatment, I do not share Codman's confidence that this will invariably be the case. Even if it were so, the length of time required would be too great in view of the amount of pain many of the patients suffer. My own procedure is to begin with physical therapy, consisting of local heat, massage, and pendulum exercises. If night pain is severe the arm is immobilized with a sling and circular body bandage when the patient is in bed. During the day active use with the arm at the side is encouraged, but motoring, lifting, and participation in sports are banned. If after a trial period of about two weeks no improvement of motion or diminution of pain has been noted some other procedure should be adopted. This usually means a choice between manipulation under anaesthesia or recumbent treatment with the arm suspended in abduction. Manipulation has given good results in my hands and has not resulted in complications, although I have seen cases of others in which the shoulder had been dislocated. During the manipulation the adhesions should be completely freed and massage and exercises should be started immediately. I do not favour the use of a splint, but I make it a rule to keep the patient recumbent in order that abduction exercises may be performed without the counter-effect of gravity.

Manipulation, however, is only too often followed by a difficult and painful period in which it is a question whether one will be able to maintain the newly acquired freedom of movement. I have been impressed by the fact that much of the original restriction of movement is due to irritation and muscle spasm, and that if this can be overcome the adhesions can be made to yield. To accomplish this result adhesive traction is applied to the upper arm with the elbow in right-angle flexion and the forearm suspended from an overhead frame, the patient being recumbent. The shoulder is generally maintained in a position of right-angle abduction, but several times a day the line of pull is changed so that positions of hyperabduction and of adduction may also be obtained. Not until the patient is able to maintain these extreme positions for considerable periods without pain—generally after seven to fourteen days—can the usual physiotherapy be started, and even then it is important at other periods to reattach the traction and suspension apparatus. Often at this stage the part-time use of an abduction splint can be substituted. Gradually the shoulder is allowed more and more freedom, and the frequency and amplitude of the exercises are increased until complete recovery is obtained.

Of my own thirty-six cases fourteen responded to physiotherapy alone, ten were treated by manipulation with nine recoveries, three were treated by traction and suspension with complete relief, and nine were untreated.

Summary

A series of 168 personally studied cases of shoulder pain is analysed.

Pathological processes are discussed in relation to the anatomy and function of the subacromial bursa.

The more common lesions involving the subacromial bursa—calcareous deposits (calcifying tendinitis), periarticular adhesions (tendinitis), and rupture of the supraspinatus tendon—are reviewed and their treatment described.

References

Codman, E. A. (1934). *The Shoulder*. T. Todd Co., Boston, Mass.
Dickson, J. A., and Crosby, E. H. (1932). *J. Amer. med. Ass.*, **99**, 2252.
Elmslie, R. C. (1932). *Brit. J. Surg.*, **20**, 190.
Meyer, A. W. (1931). *J. Bone Jt. Surg.*, **13**, 341.
Milgram, J. (1939). Communication read before the American Orthopaedic Association, as yet unpublished.
Moschcowitz, E. (1915). *Amer. J. med. Sci.*, **150**, 115.
Patterson, R. L., and Darrach, W. (1937). *J. Bone Jt. Surg.*, **19**, 993.
Porritt, A. E. (1931). *Proc. roy. Soc. Med.*, **24**, 971.
Titus, N. E. (1929). *Amer. J. Surg.*, **6**, 318.

Bibliography

Böhner, C. (1936). *Zbl. Chir.*, **63**, 2898.
Carnett, J. B. (1931). *Radiology*, **17**, 505.
Ferguson, L. K. (1938). *Surg. Gynec. Obstet.* (Int. Abst. Surg.), **66**, 472.
Haggart, G. E., and Allen, H. A. (1935). *S. Clin. N. America*, **15**, 1537.
Jung, A., and Brunschwig, A. (1931). *Rev. Chir.*, Paris, **50**, 611.
King, J. M., jun., and Holmes, G. W. (1927). *J. Amer. med. Ass.*, **89**, 1956.
Mumford, E. B., and Martin, F. J. (1931). Ibid., **97**, 690.
Sandström, C., and Wahlgren, F. (1937). *Acta radiol.*, **18**, 263.

Leaflet No. 11 in the series issued by the Department of Scientific and Industrial Research on methods for the detection of toxic gases in industry deals with aniline vapour (H.M. Stationery Office, 3d. net). Aniline exists in small quantities in coal tar, but is produced industrially almost exclusively by the reduction of nitrobenzene. It is chiefly used as a starting-point in the manufacture of dyestuffs and to a less extent in other chemical industries. Its pleasant smell in no way suggests the dangers resulting from its presence in the atmosphere. It has been shown that cases of acute aniline poisoning arise by absorption through the skin by splashes either directly on the skin or indirectly through the clothing. Its immediate toxic effect is on the blood, and the symptoms which characterize it are a blue-grey discoloration of the lips, ears, and cheeks. Depending on the intensity of the concentration, shortness of breath, rapid feeble pulse, nervous excitement not unlike drunkenness, may occur later. With a concentration of one part in 140,000 slight symptoms may occur after several hours' exposure, while with concentrations of one part in 10,000 to one part in 6,000 serious disturbance occurs if the atmosphere is inhaled for more than an hour.

TREATMENT OF HAEMORRHOIDS*

BY

W. B. GABRIEL, M.S., F.R.C.S.

Surgeon, Royal Northern and St. Mark's Hospitals

(WITH SPECIAL PLATE)

The choice of treatment of haemorrhoids depends so much on examination and an accurate estimation of the condition presented in each particular case that I should like to say a few words on these preliminaries.

Distinction between Internal and External Haemorrhoids

The distinction between internal and external haemorrhoids is of the first importance. Internal haemorrhoids arise from the columns of Morgagni as the result of dilatation and engorgement of the internal haemorrhoidal plexus, and are covered by mucous membrane which is at first of the normal bright pink colour. This colour may be changed by superficial inflammation, ulceration, or sloughing. Later, as the result of repeated prolapse and surface irritation, a large internal pile often shows an overgrowth of squamous epithelium over its lower pole. It may be noted that we see exactly the same change quite commonly over the mucous membrane of the appendix when exposed as an appendicostomy. An internal pile may thus become considerably covered by squamous epithelium, and therefore when prolapsed it somewhat resembles on superficial examination an external skin tag, but the groove which originally marked the muco-cutaneous junction, due to the attachment of the terminal fibrous expansion of the longitudinal muscle, persists in most cases and thus separates it quite clearly from an external pile.

As opposed to this an external pile is covered by skin *ab initio*, whether it is in the stage of an acute thrombosed external pile (anal haematoma) or a soft anal skin tag. Under certain conditions, however, an external pile must be carefully inspected to discover its true nature. Thus an acute haematoma may be seen at the stage when the skin has become ulcerated so that blood and clot are being discharged, and it has on cursory inspection a superficial resemblance to a prolapsed internal pile. Again, if a large mass of external thrombosis and oedema is present careful examination is often needed to detect the lower pole of a prolapsed and thrombosed internal pile in the same quadrant, which is really the "villain of the piece." The anal margins must be separated and perhaps some traction in a lateral direction applied to the haematoma, when the lower pole of the thrombosed internal pile, if present, will at once be seen.

Treatment of External Piles.—Excision of a solitary tense anal haematoma under local anaesthesia is the most common, and a very satisfactory, anal operation. A large conglomerate type of anal haematoma is best treated on expectant lines. Skin tags at the anal margin may subside with lead lotion compresses, but if large should be excised under local anaesthesia. When associated with prolapsing internal piles (intero-external type) a formal haemorrhoidectomy is the best treatment.

Degree of Internal Haemorrhoids

The treatment of internal haemorrhoids is intimately linked up with a correct assessment of the degree of prolapse. Ernest Miles (1919) divided piles into three stages.

* Read in opening a discussion in the Section of Surgery at the Annual Meeting of the British Medical Association, Aberdeen, 1939.

Primary, being the earliest stage, in which bleeding takes place at defaecation: the pile may just become grasped by the anal sphincters during the act of defaecation, but no prolapse outside the anal margin occurs.

Intermediate, when the pile protrudes through the anal orifice at defaecation and then becomes reduced spontaneously when the expulsive effort has ceased. Some bleeding still occurs, but may be less than before owing to some fibrosis taking place in the substance of the pile, together with some thickening of the mucous membrane.

The final stage is reached when the prolapse is still more pronounced and does not become spontaneously reduced at the end of defaecation; the pile remains in the prolapsed and engorged state, and digital reduction is needed after each act of defaecation. Sometimes such a pile is irreducible by reason of mere bulk, massive thrombosis, or sphincter relaxation. Even after being properly reduced, recurrence of prolapse takes place subsequently on slight provocation, such as coughing, sneezing, any lifting effort, walking or standing for any length of time, or even passing flatus.

These three stages are now more commonly known as the first, second, and third degrees. It is essential to recognize the symptoms associated with piles of the third degree: mucoid discharge and bleeding into the clothing during the day are common complaints in addition to the necessity for digital replacement.

Routine Diagnostic Methods

Inspection, digital examination, and proctoscopy are required in all cases. The patient should be asked to strain down as the proctoscope is withdrawn in order that the full degree of prolapse may be seen, and very often a bleeding point is revealed as the piles become engorged.

The presence of fibrosis in an internal pile, so that it is palpable to a finger, is evidence of recent or old thrombosis. Large prolapsing piles can almost invariably be rolled under the examining finger, and if the process has advanced to the stage of formation of a fibrous polyp this can readily be felt and can usually be hooked down until it prolapses outside the anus. A pulsating branch of the superior haemorrhoidal artery can sometimes be felt in relation to one or more of the primary internal haemorrhoids, and is a clear indication of the need for a ligature operation.

Other associated ano-rectal conditions must be accurately diagnosed. Fissure in ano is one of the most important, and if present may have considerable influence on the choice of treatment. Of the many other conditions which may coexist with haemorrhoids it is necessary to mention the not infrequent association of carcinoma of the rectum: hence a high digital examination and sigmoidoscopy with this in mind should be done in all cases.

The choice of treatment is necessarily much influenced by finding a pelvic tumour of uterine or ovarian origin, and in men prostatic enlargement often introduces a difficulty in deciding on the right line of treatment. Abdominal conditions such as cirrhosis will affect treatment. In many cases I have seen a troublesome degree of piles in patients who were taking intensive alkali treatment for duodenal ulcer, and this combination is a difficult one to treat; so also is any degree of haemorrhoids in patients with chronic cardiac or pulmonary disease. The general state of patients must always be carefully gone into, particularly if surgical treatment is proposed.

As a statement of the practice of St. Mark's Hospital I will now describe three treatments for internal haemorrhoids, each of which has a useful and in fact an essential place when applied to the right type of case.

Palliative Treatment

Small internal piles associated with a generalized congestion of the lower rectum are not infrequently seen, particularly in stout subjects who may be liable to hepatic congestion and constipation. Medical treatment directed specially towards limiting the intake of meat and alcohol is of great value; the free drinking of water and barley-water will help constipation and enable aperients to be drastically cut down. I am anxious to stress the common tendency among the general public to take aperients unwisely and to excess: drugs such as salts, calomel, phenolphthalein, and some herbal teas undoubtedly produce irritating watery stools, and when these are voided there is a considerable amount of straining and rectal congestion. Women are very liable to these troubles, which often start during pregnancy.

Palliative treatment is necessary for an attack of prolapse with thrombosis. The more the local sepsis, with ulceration or sloughing, the greater the need for palliative treatment. I am strongly opposed to surgical treatment at this stage, and although this is a matter upon which some controversy exists I shall hope to convince you that surgery in the stage of septic thrombosed internal piles is unnecessary; it is apt to result in delayed healing and chronic post-operative ulceration, which may take months or years to clear up.

The most essential item in palliation is for the patient to be in bed: the foot of the bed may be raised upon blocks, or the buttocks be slightly elevated on a pillow. An attempt should be made to reduce the prolapsed pile or piles, and in most cases this can be done with gentle but firm pressure with the forefinger, aided by some dry gauze or cotton-wool. A firm pad of gauze moistened in lead lotion is applied and kept in position by a T-bandage. If the piles cannot be reduced, as sometimes happens when there is a massive degree of thrombosis with much external oedema, the anus is shaved, the patient confined to bed, and compresses of 1 in 2,000 perchloride, eusol, lead lotion, or dettol lotion are applied every three or four hours. This treatment can be carried out effectively in the patient's home; and in the hospital class I have been struck by the excellent results obtained provided the patient realizes the importance of staying in bed. On these lines the thrombosis quickly resolves, ulceration heals, and external oedema disappears; in fact, after a week's efficiently applied palliative treatment the majority of patients are able to begin getting up and about again. Only in the worst cases, with smelly sloughing piles, is longer treatment up to two or three weeks required in bed. A perianal abscess forms occasionally, and for such surgical drainage must be given.

When thrombosis has resolved, digital and proctoscopic examination will show if further treatment is required. In many cases nothing further has to be done. For some, injections are advisable, and in a few it is clear that large prolapsing piles remain and a ligature operation is necessary for cure: in no case should this be done within six weeks after an attack of prolapse and thrombosis.

Injection Treatment

The objects of injection treatment are twofold: (1) to produce a chemical thrombosis in the internal haemorrhoidal plexus, and, following this, (2) a sclerosis in the submucous layer which will fix loose redundant mucous membrane to the inner muscle layer and by fibrosis draw up the pile so that it no longer prolapses or becomes grasped by the sphincters.

The solution which is used at all the out-patient clinics at St. Mark's Hospital is 5 per cent. phenol in almond oil, with 2 grains of menthol to 1 oz. (Albright's solution). This is injected into the submucous layer by a technique which is now so well known as not to need detailed description. The following points might be mentioned.

SELECTION OF CASES

The ideal cases for injection are first-degree piles: a single small vascular pile can almost invariably be cured by a single injection. Second-degree piles are less favourable, for although bleeding can usually be stopped and prolapse improved so that the patient becomes symptom-free, recurrence after a variable time is not infrequent. Third-degree piles, particularly those which show an overgrowth of squamous epithelium at the lower pole and those with a marked external skin tag in relation (intero-external piles), are not suitable for injection, and as a general rule a ligature operation should be performed in these cases. Associated conditions such as anal fissure, a fibrous polyp, proctitis, or any inflammatory condition such as abscess or fistula are contraindications to injection treatment.

AGE AND OCCUPATION

Patients are commonly seen with piles of the second degree verging upon the third degree, and the choice of treatment may reasonably be influenced by age and occupation. In subjects under 30 years of age it is impossible to guarantee permanent cure by any method, including operation, and for this reason injection treatment is the method of choice in young subjects, with the object of postponing the need for operation until middle age. Late second-degree piles have a better chance of responding well to injections when the patient is engaged in some professional or sedentary occupation. Men doing hard manual work are often better treated by operation with a view to permanent cure rather than be subjected to disturbance of their work by repeated attendances for injections which in the end may prove disappointing.

TECHNIQUE

It is essential to use a sufficiently long proctoscope and inject the phenol in oil into the submucous layer at the upper pole of the internal haemorrhoids. No pain should be caused by the injection, and if a patient complains of pain during or soon after injection it is certain that either the puncture has been too low down or a complicating fissure is present. There is no set routine for distributing the injections, but the constant arrangement of the three primary piles (left lateral, right anterior, right posterior) must be recognized. If one internal pile is more prominent than the others, particularly the right anterior, I find it is best to inject this alone at the first session and deal with the remainder at subsequent sessions. If one pile is seen to be bleeding, this should be chosen for the first injection.

The amount injected is usually 2 or 3 c.cm., and sufficient should be used to produce a smooth rounded swelling in the submucous layer, slightly pale but not white. In the case of a pile with a good deal of mucosal laxity it is often advisable to inject rather more, say 3 c.cm. into the upper end, and a further 2 c.cm. through another puncture slightly lower down.

When a pile is particularly vascular and bleeds freely from its lower pole, an injection of a stronger solution of phenol is valuable: for instance, 6 to 8 minims of 20 per cent. phenol in glycerin and water can be injected into the substance of the pile, using Graeme Anderson's syringe, either at the same time as the submucous injection

high up (double-injection method) or at a later session. Subsequent injections are given at weekly intervals, and when a firm submucous induration has been produced in the three primary internal haemorrhoidal areas (as judged by digital examination and by direct touch with a probe through a proctoscope) the treatments should be discontinued. Re-examination is reasonably made after an interval of four to eight weeks, and then if the condition remains satisfactory the patient may be discharged. He should be advised to report at any time in the future if a recurrence of bleeding or prolapse should be noted.

RESULTS

The results of injection treatment, when done efficiently with proper doses at the correct level, depend upon the stage reached by the haemorrhoids at the beginning of treatment. For first-degree piles there is a high percentage of cures; in the second degree the results are less favourable, there being fairly commonly a recurrence of prolapse within three to five years; in the third degree there is at the best some amelioration in prolapse for perhaps three to twelve months, but any sort of permanent cure is unlikely to be achieved. A *single* third-degree pile, particularly when situated in the right anterior quadrant, sometimes does remarkably well, and by a series of repeat injections every year or so I have been able to keep many such patients very comfortable over a course of years.

Statistics in regard to the proportion of cures in the three degrees of haemorrhoids are very difficult to arrive at, and I believe my colleague, Mr. E. T. C. Milligan, has some interesting figures to present in this connexion. To mention some mass statistics, Kilbourne (1934) reviewed more than 25,000 collected cases, and estimated that recurrence took place in at least 15 per cent. within three years: it is not unfair to assume that this 15 per cent. was probably constituted by third-degree piles which were tentatively treated by injection.

To conclude this section I should like to summarize these few important points:

1. Cases for injection must be carefully selected, chiefly with the object of excluding third-degree piles.

2. Cases must be uncomplicated by other ano-rectal conditions.

3. The technique of injection is not easy, and much care must be taken to give adequate doses of the phenol-in-oil solution at the correct level—that is, at the upper pole of the pile and slightly above the level of the ano-rectal ring.

4. Complications are due to errors in technique; pain is due to the injection being placed too low down; chemical necrosis is due to a too superficial injection, overdosage, or injection into sclerosed tissue. Abscess formation is extremely rare, and is due to a combination of the above faults.

Operative Treatment

Operative treatment is the method of choice for the permanent cure of internal piles of the third degree, particularly those of the intero-external variety—that is, a prolapsing pile with a related skin tag in the same quadrant. Operation is indicated also when piles are complicated by a fibrous polyp, a fissure, a fistula, or any other rectal lesion which also requires surgical treatment for cure.

CHOICE OF ANAESTHETIC

In my opinion the ideal anaesthetic is a local infiltration of the external sphincter with 1 per cent. procaine by Hirschman's technique, supplemented by a subcutaneous injection of the solution at the anal margin in relation to the three primary piles. This form of anaesthesia gives perfect relaxation and is very rarely followed by any urinary difficulty; for instance, I have operated on a man aged 86 and a woman of 87 by this method; neither patient had to be catheterized after operation and both made a perfect recovery.

The next best form of anaesthesia is a low spinal injection, which also gives a perfect anaesthesia for the operation, but is followed in 5 to 10 per cent. of cases by a troublesome headache, and retention of urine is more common. General anaesthesia is seldom used, and its avoidance has contributed largely to post-operative comfort, for straining and vomiting have been practically eliminated by the use of local or spinal anaesthesia.

CHOICE OF OPERATION

It would appear that the operation for cure of haemorrhoids has now become more standardized, and I submit that Whitehead's operation, the clamp and cautery method, excision and suture over a clamp, and many others should all be relegated to the past. Even Salmon's ligature operation, which was practised by Salmon, Allingham, and their successors at St. Mark's Hospital for nearly a century, has now been superseded.

In 1919 Ernest Miles described his standard method of haemorrhoidectomy: a V-shaped flap of skin at the anal margin was raised at the base of each primary pile, the base of the V being at the muco-cutaneous junction, and a stout silk ligature was tied round the internal pile and the tissue thus dissected up. The anatomical difference between this operation and Salmon's operation—in which, it may be recalled, the scissor cut is made at the muco-cutaneous junction—remained unexplained until Milligan and Morgan's (1934) classical paper on the "Surgical Anatomy of the Anal Canal," which shows clearly that when this wide incision is made the longitudinal muscle is included in the ligature. This has now formed the most important feature of their later paper (Milligan, Morgan, Jones, and Officer, 1937), and a precise and ideal operative technique is now available. I speak with much enthusiasm regarding this operation, which enables the three primary piles to be removed completely; the ligatures are tied round the pedicles of the piles and are fixed by the inclusion of the longitudinal muscle, so that they cannot slip upwards and expose raw surfaces in the anal canal. The best ligature material is a matter of opinion: I prefer No. 3 chromic catgut on a round-bodied needle, tied by transfixion, with the knot on the lumen. The related portions of the external venous plexus are removed, together with the overlying skin, and post-operative tags are noticeably absent after this operation. Other benefits conferred by this operation are quicker healing, greatly reduced and almost absent risk of post-operative stricture, and total abolition of secondary haemorrhage, due, I presume, to the better fixation of the ligatures.

RESULTS OF OPERATION

When the operation is correctly performed for prolapsing haemorrhoids in a patient of middle age or over a permanent cure can be confidently promised in all cases. If the operation has to be done for young subjects under 30 the outlook is not so consistently good; I agree with Miles that some reserve must be exercised in promising cure in these cases, seeing that the primary piles may not all be fully developed at the time of operation. Apart from this, recurrences after operation are only rarely seen, and are due to faulty technique—that is, inadequate exposure of the piles and ligation of their lower extremities only, or omission to secure all three primary piles.

Conclusion

I should like to take this opportunity of stressing the safety of a haemorrhoid operation when done under modern conditions and the certainty of cure of a distressing and disabling complaint. The common notion among the public that haemorrhoidectomy is a very painful operation is one that should be strenuously opposed. The modern operation under local anaesthesia, with a carefully considered and well-tried after-treatment, is far from being a serious ordeal: the patient is able to walk to a bath on the third post-operative day, and the anal wounds are usually almost healed in two weeks after operation.

Summary

Essential points in the preliminary examination of a case of haemorrhoids are detailed: how to recognize the difference between internal and external haemorrhoids, the three degrees of internal haemorrhoids, and other associated anal conditions.

The treatment of external piles is described.

The three main lines of treatment for internal piles in routine use at St. Mark's are given: palliative, injection, and operative.

The safety of a haemorrhoid operation done under modern conditions, and the certainty of cure, are stressed.

REFERENCES

Kilbourne, N. J. (1934). *Ann. Surg.*, **99**, 600.
Miles, W. E. (1919). *Surg. Gynec. Obstet.*, **29**, 497.
Milligan, E. T. C., and Morgan, C. N. (1934). *Lancet*, **2**, 1150.
—— —— Jones, L. E., and Officer, R. (1937). Ibid., **2**, 1119.

ELECTRICALLY INDUCED CONVULSIONS IN TREATMENT OF MENTAL DISORDERS *

BY

Wm. H. SHEPLEY, M.B., Ch.B., D.P.M.
Senior Assistant Medical Officer, Warlingham Park Hospital

AND

J. S. McGREGOR, M.B., Ch.B.
Assistant Medical Officer, Warlingham Park Hospital

(WITH SPECIAL PLATE)

It has long been observed that any severe shock, traumatic, pathological, or psychological, may occasionally lead to dramatic improvement in certain cases of mental disorder. Within the field of psychiatry the term "shock therapy" may be taken to mean the purposive induction of a sudden and disturbing physical or mental impact with specific remedial intent, to alleviate a disordered state of mind. To-day the term is used with narrower connotation, and denotes the induction of a state of coma by the administration of insulin (Sakel) or the production of epileptiform convulsions by such drugs as cardiazol, triazol, or picrotoxin. Dr. Lazlo von Meduna, in 1934 at Budapest, was the first to practise convulsion therapy, by using a solution of camphor in oil administered intramuscularly. This was soon superseded by the intravenous injection of an aqueous solution of cardiazol, giving more certain and controlled action (von Meduna, 1934). Meduna adopted the latter method of treatment because it had been observed that when epilepsy supervened in some cases of schizophrenia the schizophrenic symptoms cleared up (Muller, 1930). This has since been recorded by other workers (Shepley, 1938). Von Meduna (1937) suggested hypothetically that a biological antagonism exists between schizophrenia and epilepsy, and although the validity of this hypothesis is still disputed it is agreed by most workers that, despite certain disadvantages, the treatment is justified by results.

A new method of inducing convulsions by means of electric current has recently been introduced to this country, and definite advantages are claimed for it. It originated at Rome, being evolved by the Italian workers Cerletti and Bini in an effort to overcome the disadvantages of the drug method. The introduction of the electric method may appear to require some justification, since it necessitates the use of considerable voltage. The disadvantages of the drug methods are well known, and it is only necessary to summarize them here. In our experience the principal drawback is the extreme fear and apprehension engendered in some patients, a fear which is so great as to induce Neustatter and Freeman (1939) to use general anaesthesia in an effort to overcome it. This fear is also a great disadvantage where it is necessary to repeat the injection in order to obtain the major fit. Again, extreme and distressing psychomotor excitement often lasting some hours is met with; also such sequels as vomiting, confusion, and irritability are common in spite of careful preparation of the patient. Transient loss of memory and even gross intellectual impairment have also been reported (Dynes, 1939). Dislocations of the jaw and fractures of spine and femora have occasionally been noted by some observers (Stalker, 1938; McGuinness, 1939), while cardiac complications such as arrhythmias, auricular fibrillation, and heart-block have been recorded (Dick and McAdam, 1938). Difficulties are also encountered from the thrombosis of veins, as well as from their inaccessibility in obese subjects and those whose veins are of poor calibre. To some extent these difficulties can be avoided by the use of triazol, but this carries certain new disadvantages.

Nor is the induction of convulsions by the drug methods devoid of mortality, though this is certainly of low incidence. The report of the Board of Control for the year 1938 gives the number of deaths from cardiazol as ten: no analysis of these figures, however, is given. Without any suggestion of comparison, but merely as an indication that electrically induced methods are reasonably safe, it can be stated that a considerable number of such convulsions have been induced without fatality in patients treated at the Rome clinic. In evolving the new technique Cerletti applied the experience gained in previous research upon the problems of epilepsy undertaken at Genoa. He had produced epileptic fits in animals, chiefly dogs, by means of the normal electric current (125 volts A.C.). This was applied for a fraction of a second, the electrodes being placed in the mouth and the rectum. The technique and the physio-pathological results were published by his pupil Chiauzzi (1934). Together with his assistant Bini, Cerletti continued his researches in Rome. It was Bini who constructed the simple but practical instrument used to regulate the voltage and the duration of the passage of the current. This when perfected was patented in Italy by Bini, and was described by him as an "apparatus for electric applications." In the clinic at Rome where Cerletti carried out his observations the histological examination of the cerebral cortices of dogs was made after the application of much higher voltages than necessary to induce a fit and following the induction of multiple fits. These examina-

* Received for publication December 1, 1939

tions showed an absence of such neuro-pathological changes as had been found following insulin coma and in a lesser degree following cardiazol convulsions (Accornero, 1937), which included the presence of haemorrhages, disappearance of Nissl's granules, and other cell changes of a more chronic nature, such as alterations of the cytoplasm, glial alterations, and dilatation of vessels with changes of endothelium. These changes were observed throughout the cortex in two groups of dogs, the first having been killed by insulin administration and the second by other means following thirty insulin comas.

Technical Aspects, including Description of Apparatus

The apparatus is essentially a modification of the Bini patent designed and built for us by a British firm, the "Solus" Electrical Co. Ltd. (Plate, Fig. 1). It consists of two independent electrical circuits. The first is a low-voltage D.C. circuit suitable for direct measurement of the patient's head resistance. The second is capable of applying to the electrodes an A.C. voltage which can be varied by means of a tapped autotransformer between 50 and 150 volts. It is able to deliver 2,000 mA, and the time of the shock is automatically limited by means of an electrical time switch adjustable between 0.1 and 0.5 second. The apparatus is housed in a light portable switch-table.

The Electrodes.—These consist of four silver-plated straps mounted on a rubber cushion and fixed to a chrome metal frame. The whole is mounted on an adjustable clamp connected to the apparatus by a two-core lead (Fig. 2).

Application of the Electrodes.—The electrodes are covered with a piece of thin linen soaked in 20 per cent. salt solution. Over the head at the junction of the temporal and parietal bones contact paste (the formula for which is here given) is smeared and the electrodes are firmly applied to the patient's head. Care must be taken that they are in close apposition, or the measuring of the head resistance will be unreliable.

Formula for Contact Paste

Solution No. 1.—Dissolve 50 grammes of gum tragacanth and 60 grammes of glycerin in 1 litre of tap water by heating on a water bath for two hours, stirring continuously.

Solution No. 2.—A saturated solution of common salt in water, 1 litre.

Solution No. 3.—100 grammes of distilled water (hot) and 20 grammes of potassium bitartrate (hot).

Add solution No. 3 to No. 2 and mix with No. 1; then add 3 grammes of pure carbolic acid. Cool and add 500 grammes of powdered pumice-stone, and mix. Should the mixture be too fluid more tragacanth may be added. The advantage of this paste is that it is non-greasy.

Measuring Head Resistance.—The electrodes being connected up, the change-over switch is placed in the position of "Measurement" and the apparatus switched on to the mains. Before measurement the measuring circuit has to be compensated or made independent of incoming mains voltage. This is accomplished by means of a knob marked "Calibration," together with a milliamperemeter, and by inserting a known resistance in the circuit. On switching over from this resistance to the electrodes a potentiometer can be adjusted so as to make the milliamperemeter read on the red line. The patient's resistance can be read directly in ohms on the potentiometer. The apparatus permits of direct measurements of resistances between 0 and 2,000 ohms, and measurements up to 4,000 ohms by adjusting to a green line on the milliamperemeter and multiplying the results by 2.

Shock.—After switching over from "Measurement" to "Shock" the voltage to be applied can be adjusted and pre-read on the voltmeter. The choice of the voltage is based on the previous resistance measurement and on experience. The required shock time is then adjusted on the time switch and the shock will now be applied by means of a press button, which is held down slightly longer than the adjusted time. The electrical time switch terminates the flow of the current after the adjusted time. As a safety measure the time switch is so designed that a breakdown would merely prevent operation. However, as a further safety measure, releasing of the button will instantly break the current, independently of the time switch.

Measurement of Shock Current.—The measurement of the current passing through the head during the shock time is obtained by a ballistic method which permits of direct reading of the milliampere-seconds which have passed through the patient's head during the shock. This reading, together with the setting of the time switch, allows easy calculation of the current in milliamperes, and is therefore useful for obtaining comparative values. This apparatus shows three advantages over the Italian, as follows: (1) the electrical time switch; (2) the ballistic method of measuring the milliampere-seconds; (3) the arrangement for compensation of fluctuation in the mains.

Voltage Determination.—This is largely a matter of experience, and the figures given by the Italian workers appear of little help to us, for in our experience their upper and lower limits of 80 to 115 volts are too low. The lowest voltage with which we obtained a major fit was 90, giving 600 mA through the head. Measurement of the head resistance affords some indication of the voltage to be applied, but it bears little relation to the actual resistance on the "shock" circuit. The voltage used by us varies between 90 and 145, with a time setting of 0.1 to 0.2 of a second.

Results of Passage of Current

These may be described as the major fit and the abortive fit, but in both the immediate effect is loss of consciousness.

The Major Fit.—This is a typical epileptic fit. Consciousness is lost immediately the shock button is pressed, and the fit occurs at once or after an interval varying up to one minute. There may be a cry, but so far we have not observed a cough such as is commonly noted after an injection of cardiazol. The mouth opens and a gag can be inserted. The body is seized in intense generalized tonic contraction, which lasts on an average ten seconds. In this stage the face becomes flushed and there may be dilatation of the vessels of the skin of the upper part of the chest. This is followed by the clonic stage, during which the face may become cyanosed and there may be frothing at the mouth. In one case only have we observed complete arrest of respiration, which was readily overcome by pressure on the chest. In this stage there may be voidance of urine and evacuation of faeces. The pupils during the fit are widely dilated and fixed and the conjunctivae may be injected. At the end of the fit the deep and superficial reflexes are usually absent, but within a minute or two the tendon jerks are found to be very brisk or even exaggerated and knee and ankle clonus have been elicited in some cases. The systolic blood pressure often shows a fall of 10 mm. Hg immediately after the fit, and the pulse is found to be slower. These effects have passed off in about five minutes. The average duration of the fit is fifty seconds, and the patient is restored to consciousness and able to talk somewhat drowsily within a few minutes. Until consciousness has returned some patients are slightly restless, but we have not observed any psychomotor excitement such as is so commonly met with after cardiazol.

The Abortive Fit.—Here again consciousness is suddenly lost for a few seconds. In most cases there is an initial generalized myotonic flexion of the body which is often strong enough to cause the patient to assume a sitting posture for a moment. The face becomes flushed, the pulse rate is accelerated, and the blood pressure shows an increase of about 10 mm. Hg. Respiration may be shallow and the face assumes a dusky hue. The pupils may be dilated and fixed, but most often they react briskly. Although this is what is most commonly seen during an abortive attack the effect may be so slight as to cause only loss of consciousness and flushing of the face. The electrodes may be reapplied within two minutes and another attempt made to produce the major result. No objection is raised to this by the patient, and there appears to be no contraindication.

In both of these types of attack there is a retrograde amnesia for a period of about two minutes before the passage

of the current. Fifty major fits have been induced without untoward occurrence. The only complaint made by some patients is of slight headache.

Summary and Conclusions

A method of inducing epileptiform convulsions by electricity has been described. The chief advantage of this method over other convulsion therapies is that it ensures instantaneous loss of consciousness, so that there is no fear or apprehension. While in a preliminary report such as this it is not possible to make definite statements regarding therapeutic results, we have every reason to believe that these will compare favourably with those obtained by other methods, and indeed may be better, as the patients do not live in fear and dread of the next treatment day. Another advantage is the absence of recovery symptoms such as psychomotor excitement and vomiting.

We have also applied this method to patients in insulin coma with entire absence of ill effects.

We are indebted to Dr. T. P. Rees, medical superintendent of the Warlingham Park Hospital, for permission to publish this report and for his active interest in the work; also to the "Solus" Electrical Co. Ltd. for their technical advice and co-operation, to Drs. Kalinowsky and Kurt Fried for certain contributions.

REFERENCES

Accornero, F. (1937). *Suisse Arch. Neurol. Psychiat.* (Supp.), **39**, 93.
Chiauzzi, A. (1934). *Pathologica*, **26**, 18.
Dick, A., and McAdam, W. (1938). *J. ment. Sci.*, **84**, 999.
Dynes, J. B. (1939). Ibid., **85**, 493.
McGuinness, J. P. (1939). *Lancet*, **1**, 508.
Muller, G. (1930). *Anfalle bei Schizophrenen Erkrankungen.*
Neustatter, W. L., and Freeman, H. (1939). *Lancet*, **2**, 1071.
Shepley, W. H. (1938). *British Medical Journal*, **1**, 1364.
Stalker, H. (1938). *Lancet*, **2**, 1172.
von Meduna, L. (1934). *Arch. Psychiat. Nervenkr.*, **102**, 333.
—— (1937). *Die Konvulsionstherapie der Schizophrenie*, Carl Marhold, Halle.

TREATMENT OF OTORRHOEA BY ARGYROL DISPLACEMENT

BY

W. OGILVY REID, M.A., B.Sc., M.B., F.R.C.S.Ed.

Deputy Medical Superintendent, Downs Hospital (L.C.C.), Sutton, Surrey

A very large percentage of the cases of chronic otorrhoea which come to this hospital require operation on the mastoid to cure. Conservative treatment is, however, extensively used where operation does not appear to be called for and also in "borderline cases" in which there is just a chance that operation can be avoided. In addition, following mastoid operation, some further treatment to the middle ear is often required to achieve a dry ear. Of the various conservative measures adopted I have been most favourably impressed by argyrol displacement. As a local application argyrol is well recognized by those who treat the discharging ear, but it would appear that the use of it by the displacement method is not so frequently resorted to. This article is written to advocate its wider use.

It is a truism that none of the ear drops in general use can be expected to benefit the condition if they do not get the length of the diseased middle-ear mucosa at least. For this reason thorough toilet of the ear to remove any obstructing discharge or debris is regarded as essential before the instillation of the drops. Even so, the medicament inserted cannot in most cases be expected to reach the furthest recesses of the tympanum and epitympanum, where mucosal disease may lurk. It is in an attempt to achieve this desirable object that resort is made to the displacement method of Proetz. The principle of the latter is that air is evacuated from the middle-ear cleft as completely as possible and the appropriate fluid is then allowed to fill up the vacuum so created. The process is a gradual intermittent one, and the complete "displacement" of the air and replacement by drops is achieved by repeated partial evacuations until something approaching the ideal is achieved—that is, the complete filling of the middle ear and its recesses by the medicament, in this case 10 per cent. argyrol solution. It will be recalled that the same principle is applied in order to fill the middle ear with zinc sulphate solution before the electric current is passed in the treatment of otorrhoea by ionization.

Choice of Cases

Cases definitely requiring operation are, of course, excluded. In cases doubtfully placed in this category the method is worth a trial in the first instance. Otherwise, any case of chronic otorrhoea may receive the treatment. Of those, the cases with a fairly thick muco-purulent or frankly purulent discharge do best, and for the cases at the other end of the scale, as it were, with a purely mucoid discharge, ionization would appear to be preferable and achieves the better result.

Technique of Argyrol Displacement

The ear is cleaned thoroughly. Then, the patient lying with the affected ear uppermost, the latter is filled with 10 per cent. argyrol to the lower level of the tragus. The Siegle speculum is then fitted into the meatus with the bulb compressed. When satisfied that the connexion between speculum and meatus is airtight the bulb is allowed gradually to expand. This manœuvre is repeated three times.

In many cases it will be found that the essential airtight connexion between Siegle and meatus cannot be achieved, and in those resort is made to the alternative method of tragal pressure. A piece of wool on top of the finger is held in front of the tragus and the latter then pressed forwards over the meatus so as to occlude it completely. A little further pressure is now exerted so as to force this temporary "cork" slightly into the meatal opening, after which it is released gradually, when a definite sensation of suction is experienced. This is repeated three times or so. The level of the argyrol in the meatus will now be observed to have lowered appreciably, indicating that the fluid has passed successfully into the middle ear by displacing the air in the latter. The outer ear is finally packed with cotton-wool to absorb surplus argyrol and the patient allowed to stand up. The treatment is repeated daily.

Discouragement should not result from the fact that the discharge may be more in quantity and worse in quality in the early stages of treatment. On the contrary, this is actually an indication that the case in which it occurs is likely to respond well eventually. When one remembers that argyrol acts essentially by promoting a local leucocytosis and so indirectly bringing about control of the infection the sequence of events is more readily understood. In a favourable case these are as follows. About the sixth day of treatment the discharge becomes very much greater and may be more purulent in character. This

may continue for as long as a fortnight before the next phase becomes manifest. The discharge now becomes progressively more mucoid, and gradually diminishes in amount until the ear is only moist. The argyrol is then omitted and the ear simply cleaned out daily, dried with spirit, and a little boric powder insufflated.

Results of Treatment

The following is an analysis of the results achieved in a series of 116 cases:

Cases cured	72 (62.07 %)
Cases not improved	37
Cases not completing treatment for various reasons	7
Cases readmitted for treatment	2

Without an adequate control series it is of course unscientific to claim any particular virtue for a method, but one feels it must be agreed that a 62.07 per cent. cure rate justifies the use of argyrol displacement, especially as it is a simple procedure which can quite well be carried out at clinics treating large numbers of cases. As the number of attendances is a factor of importance in the organization of such clinics, it should be emphasized that although the treatment must be repeated daily and no breach of continuity be allowed to occur the total period of treatment need not be a long one. In this series the average number of treatments necessary to achieve a dry ear was only twelve, although quite wide variations were noted, the least number required being three and the greatest thirty-six. Of the thirty-seven failures recorded a few were cured by ionization; but the majority came to operation, and can therefore hardly be regarded as a reflection on the method here described as a non-operative treatment.

The eradication of nasopharyngeal infection is essential in any attack, operative or non-operative, on the discharging ear, and that measure was of course not omitted in the cases in this series. Nevertheless the value of this method as a means of permanent cure of otorrhoea is not established here. But such criticisms may be levelled with equal weight against any other conservative procedure—the arrest of discharge for a reasonable length of time being accepted as the criterion of success.

Conclusion

It might be well to conclude this article by emphasizing the fact that the treatment here advocated can be quite satisfactorily carried out by a nurse trained in the technique, and at the same time I take the opportunity of acknowledging the efficient work of the staff who treated the cases in the above series under my supervision. Thanks are also due to Dr. C. Price, medical superintendent of the hospital, for his helpful interest in the work.

Genoscopolamine.—Genoscopolamine is an aminoxide of the alkaloid scopolamine in the form of the hydrobromide, and was first produced by Polonovski in 1925. According to the authors it is a useful substitute for scopolamine, atropine, or stramonium in the treatment of Parkinsonism. In the twenty-two cases treated it had a beneficial effect, especially upon rigidity, tremor, muscular weakness, salivation, and upon the oculogyric crises. Its toxicity is low, and it is especially effective when used in conjunction with small doses of atropine. —Genoscopolamine: Its Use in Parkinsonism. J. H. Scharf and S. T. Manong.—*J. nerv. ment. Dis.*, May, 1939, **89**, 682.

ACUTE TORSION OF THE GALL-BLADDER

BY

A. H. BARBER, M.A., M.B., M.R.C.P., F.R.C.S.

Late Lecturer in Anatomy in the University of Birmingham

Torsion or axial rotation of the gall-bladder cannot occur in a normally situated organ. In the vast majority of cases the gall-bladder lies in a shallow fossa on the under surface of the liver, and only its fundus and posterior surface are covered by peritoneum. In its development the gall-bladder is intimately associated with the liver. The liver is formed as a diverticulum from the ventral surface of the foregut. This diverticulum grows forwards into the septum transversum and gives off solid buds which form the right and left lobes of the liver. The original diverticulum from the foregut forms the bile duct, and from this the cystic duct and gall-bladder are developed as an outgrowth or evagination. This outgrowth is normally of such a length that only its distal end (the fundus) comes to lie below the level of the anterior border of the liver. In very exceptional cases, however, it is so elongated that the whole of the ultimate gall-bladder lies below the anterior border of the liver, and the fossa for the gall-bladder is occupied by the lengthened cystic duct. In these circumstances the gall-bladder is completely invested with peritoneum and hangs freely in the abdomen, and unless this very rare anatomical abnormality is present true torsion cannot occur.

In certain cases the peritoneal relations are such that the gall-bladder is attached to the liver by a double fold of peritoneum which forms a mesentery. No doubt this will allow of considerable movement of the gall-bladder, but no complete axial rotation can take place. With regard to torsion, the peritoneal arrangements are of little significance compared with the all-important relation of the gall-bladder and cystic duct to the liver. While abnormalities of the bile ducts have been carefully studied, very few statistics appear to have been published on anomalies of the gall-bladder. Brewer (1899) states that in 100 dissections of the gall-bladder and biliary ducts he found five cases in which the gall-bladder was attached to the liver by only a double fold of peritoneum, but no record is given of any case where the gall-bladder was attached to the liver merely by the pedicle of the cystic duct and vessels. The latter condition must be extremely rare, and torsion in these circumstances becomes such a simple matter that one would infer that it must almost inevitably occur. The mechanism producing it would appear to be the movements of the gastro-intestinal tract. Such a theory appears to offer an explanation of the following case of acute torsion.

Case Report

The patient, a warehouseman aged 46, was admitted to Boundary Park Hospital, Oldham, on Monday, January 23, 1939. On the previous day, just before his dinner at 2 p.m., he was seized with a very severe abdominal pain which was in the right upper abdomen; it "doubled him up" and he felt "as though he had been kicked in the stomach." He had had his breakfast at about 8.30 a.m., and until the onset of the sudden severe pain he had felt perfectly well. He was in fact looking forward to his Sunday dinner, and said he felt he could have eaten two; but through the onset of the pain he was unable to eat anything. The pain continued all day, and at 11 p.m. he vomited. During the night he could not sleep and in the morning vomiting became persistent.

At about 11 a.m. he was seen by his doctor, who sent him to hospital. I saw him immediately after his admission.

He was a well-developed man of spare build; he suffered from chronic bronchitis, but otherwise had had no previous illnesses of any significance. His abdomen was scaphoid and very rigid, with considerable tenderness in the right hypochondrium and epigastrium. No mass was palpable; his temperature was 99°, pulse 112, and respirations 24. A diagnosis of perforated peptic ulcer was made and immediate operation decided upon.

The abdomen was opened through a right upper paramedian incision, and on going through the peritoneum a deep blue-black tensely distended structure literally popped through the wound. It was about the size and shape of an orange, and was seen to be an abnormally situated gall-bladder which had twisted through 360 degrees in a clockwise direction. Its blood supply was cut off and it was becoming gangrenous. The whole of the gall-bladder was completely covered with peritoneum and was suspended from the anterior border of the liver by the cystic duct and vessels. The cystic duct, which was much longer than usual, continued its course superficially embedded in the liver in what is normally the fossa for the gall-bladder. There was a considerable amount of blood-stained fluid in the upper abdomen. The gall-bladder was removed by placing a ligature around the cystic duct and vessels at the level of the anterior edge of the liver. It was an extremely simple operation; no easier cholecystectomy could ever be performed. A small drain was placed in the upper abdomen through a separate stab incision. On examination afterwards the gall-bladder was found to be full of blood-stained bile; there were no stones, and the wall was not thickened except by oedema. Until the torsion had occurred the gall-bladder had apparently been physiologically normal. The patient made a good recovery; his bronchitis troubled him somewhat, but he was discharged on February 28.

Commentary

Several points about this case call for comment. With regard to the diagnosis one had no hesitation in believing it to be a perforation. The persistent vomiting was against this diagnosis, but the extreme rigidity and tenderness appeared to leave no room for doubt. It seemed probable that a small leak had occurred on the previous day and had later recurred on a larger scale. But apart from the precise diagnosis, the clinical picture could not be interpreted as anything but an "acute abdomen" requiring immediate surgical intervention. The fatal mistake of regarding it as a severe case of cholecystitis and biliary colic appeared impossible.

The sequence of events in the history seems to provide an explanation of the mechanism of the torsion. It occurred immediately before the patient's Sunday dinner, when waves of peristalsis in the fasting stomach would be at their maximum. These waves passing down the stomach from left to right would tend to rotate the full gall-bladder in a clockwise direction; and once a protective spasm of the recti had been called into play this muscular contraction would tend to keep up the torsion rather than to undo it. Lastly, the treatment of the condition is extremely simple and effective.

Most of the cases hitherto recorded have been in elderly women, and according to Short and Paul there have been only six cases recorded in males. The first account of the condition was published by Wendel in America in 1898. In describing his case Wendel commented on the anomalous length of the cystic duct, which permitted the extreme mobility and migration of the gall-bladder; and in performing cholecystectomy he divided the cystic duct at the anterior border of the liver. In more recent years cases have been reported in this country by Lett (1909), Frankau (1922), and Irwin (1921), while Short and Paul in 1934 added three others and gave a comprehensive account of the subject together with a summary of all previous cases.

REFERENCES

Brewer, G. E. (1899). *Ann. Surg.*, **29**, 721.
Frankau, C. H. S. (1922). *Brit. J. Surg.*, **10**, 301.
Irwin, S. T. (1921). Ibid., **9**, 310.
Lett, H. (1909). *Lancet*, **1**, 1099.
Short, A. R., and Paul, R. G. (1934). *Brit. J. Surg.*, **22**, 301.
Wendel, A. V. (1898). *Ann. Surg.*, **27**, 199.

Clinical Memoranda

Treatment of Foetal Hydrocephalus

(WITH SPECIAL PLATE)

Foetal hydrocephalus may be a source of considerable difficulty during delivery. The usual methods of treatment are through the vagina—for example, puncture of the skull or tapping the spinal canal: these may be difficult to perform, and since the patient is in labour and the lower uterine segment is already considerably stretched and attenuated, vaginal manipulation may be the factor causing rupture of the uterus. It has been suggested by Walsh that these disadvantages may be overcome by transparietal aspiration of the foetal skull. The following is an account of a case treated by this method.

A primigravida aged 23 was admitted to hospital on February 24, 1939. The head was not fixed, and *x*-ray examination showed foetal hydrocephalus (Plate, Fig. 1). On the same date 14 ounces of cerebrospinal fluid were withdrawn from the skull. Fig. 2 shows the skull after aspiration. Labour began on February 25, and spontaneous delivery took place on the 27th, after thirty-eight hours in labour. The child weighed 5 lb. 8 oz. The patient made a good recovery and was discharged on March 13.

The technique of aspiration is simple. The skin of the abdomen being prepared and the bladder emptied by catheter, the skin is anaesthetized by injection of 1 per cent. novutox in the midline just above the symphysis pubis. The foetal head is fixed with one hand on the abdomen, and a long intramuscular needle attached to a 10-c.cm. syringe is inserted through the anaesthetized area of skin into the skull. Aspiration is repeated till no more cerebrospinal fluid can be withdrawn.

The possible disadvantages of the method are injury to the bladder or puncture of a loop of bowel, which, rarely, may lie in front of the uterus. The advantages are the ease of performance, the absence of shock, and the lessened risks of sepsis and perforation of the uterus.

WILLIAM MORE, M.D., D.R.C.O.G.,
Assistant Medical Superintendent, Stepping Hill Hospital, near Stockport.

Fracture-Dislocation of Cervical Spine

(WITH SPECIAL PLATE)

The following unusual case is probably worth being placed on record.

CASE REPORT

In July, 1938, a very miserable Egyptian peasant woman, about 30 years of age, came to this hospital with a two-months history of having fallen from a height of nine or ten feet, with resulting injury to the neck. A diagnosis of fracture-dislocation of the cervical spine was made. No paralysis of limbs or trunk was found, reflexes were normal, and respiration appeared normal also. A lateral radiograph (Plate, Fig. 1) showed a surprising state of affairs: there was

a forward dislocation between the atlas and axis to a degree that would seem incompatible with continued existence. The woman was not very intelligent, but careful questioning made it clear that although she was stunned by the fall she never suffered from any noticeable paralysis at any time.

Treatment was begun with gradual traction, which was applied by means of head-harness and a pulley and weights, with the patient lying flat on her back, with no pillow, the head of the bed being raised on blocks so as to obtain counter-traction from the body weight. After two days a small pillow was placed under the shoulders and lower cervical vertebrae to increase the extension of the neck. After eight days the dislocation seemed almost reduced, but no further progress was apparent, and the patient was getting distinctly restive. Accordingly she was anaesthetized carefully and traction was exerted while the neck was cautiously manipulated and a plaster helmet and collar was applied, extending from vertex to upper thorax, leaving only the face uncovered. The result of this manipulation is shown in Fig. 2 (the bones had to be outlined in this and the next figure as the thickness of the plaster made the films rather indistinct). The reduction was not quite perfect, but was considered to be as good as was possible.

The woman's husband would not leave her in hospital indefinitely, and before long we were obliged to let her go out, after extracting a promise that she would attend the out-patient department at least once a month. She did not, however, visit the hospital again till October, 1938, when the plaster was found to be firm but filthy. She complained of headache, and the ears were ulcerated and oedematous; this latter was due to the plaster having been nibbled away to allow her to hear better. The plaster was removed, and the patient was kept flat on her back till her skin and ears had recovered. She refused to have another "helmet" applied, and so use was made of the following device, which Dr. Kamel Hussein of Cairo looked up for me in a French surgical journal:

A plaster collar was applied from the upper thorax to just below the occiput, leaving also a little freedom for the lower jaw. A metal loop was incorporated in the plaster at its upper end posteriorly; extension of the upper cervical spine was maintained by means of a band going round the forehead and tied firmly to the loop behind. The patient slept on her back at night with a pillow under her shoulders, and the band was loosened to give her a rest from pressure on the forehead.

The patient was unwilling to stay in hospital for more than three weeks, by which time she was educated in the use of the appliance and seemed less discontented than before. The radiograph taken at that stage showed a slight slipping of the reduction, but her refusal to undergo further manipulation forced our hands, and she was allowed to go out in plaster. In this radiograph (Plate, Fig. 3) there appears to be a bony mass extending from the body of the axis to the basi-occiput. The patient did not appear again till January, 1939, when the plaster was found to be in a satisfactory condition. She was requested to come again after a month, but, despite letters and offers of free treatment and travelling expenses, she has refused to come near us, her excuse being that she was quite well and could see no reason for making a long journey. It is a pity that another, and probably very interesting, x-ray film is not available.

A member of our Egyptian staff was travelling near her village in May, 1939, and visited her at my request. He reported that she had removed her plaster and seemed to be quite well. In July, 1939, Dr. Griffiths of this hospital happened to be at her village, and so examined her. He reported that her appearance was normal, that she held up her head well and could nod quite effectively, but that lateral movements, though present, were limited. The neck seemed firm; a bony protuberance could be felt below the occiput, and she had an increased anterior curve of her lower cervical spine (probably compensatory). In fact, a radiograph, if available, would probably closely resemble Fig. 3. Whether or not she is living "on the brink of a precipice" I would not like to say. Anyhow, the end-result would appear to be functionally satisfactory.

CONCLUSION

I am aware that the result in this case is not perfect, but conditions made it very difficult to do any better. Such a fracture-dislocation is not unique, but the extreme degree of displacement, the complete absence of paralysis, and the time elapsing between the injury and proper treatment make the case a distinctly unusual one.

I am indebted to the radiologist for his help and to the principal medical officer, Dr. N. J. Griffiths, for his permission to publish this case.

E. N. CALLUM, F.R.C.S.Ed.
C.M.S. Hospital, Old Cairo,
Egypt.

Union in a Pathological Fracture due to Metastases from Gastric Carcinoma

(WITH SPECIAL PLATE)

Union in fractured bone which is the site of secondary carcinoma is unusual except in the case of prostatic carcinoma. The following rather incomplete case record seems rare enough to justify publication.

CASE REPORT

The patient was a married woman aged 71. I was first asked to attend her at her home in June, 1938. Her complaint was that she felt weak, had no appetite, and had nausea. She had no vomiting, was anaemic, and had lost weight. Examination revealed a small fixed tumour at the pyloric part of the stomach. There was no enlargement of the liver and there were no palpable glands anywhere. The other abnormality found was auricular fibrillation. I advised my patient to go into hospital for complete investigation, but this she absolutely refused to do. She was a fine old lady, but shy and dour—of the old Scottish school. Having told the patient's relations what I thought of her condition, I did what I could to make her as comfortable as possible, using simple therapeutic measures for the cardiac and gastric disorders.

In November, 1938, she complained of neuralgic pain in her right arm. This did not have any definite nerve distribution, and responded to analgesic drugs. The cardiac condition improved and the gastric condition remained much the same. On December 13, while up and about in the house, she was lifting an empty enamel washing basin with both hands when she was seized with acute pain in her right arm and dropped the basin. The pain was sickening; the power of the arm was lost and unnatural mobility was present. I saw her shortly afterwards and found that she had a fracture of the middle of the right humerus with overlapping of fragments. Having put on temporary splints, I insisted on removing her to hospital. At Kilmarnock Infirmary under morphine and local anaesthesia I put the arm up in a U-shaped plaster splint reinforced around the middle and with the plaster carried up over the tip of the shoulder. The arm was then radiographed, and the plates showed a pathological fracture of the middle of the humerus (Plate, Fig. 1). The radiologist's report was "pathological fracture of humerus due to metastases from a possible carcinoma."

The patient returned home in three days' time with a forearm sling. She was comfortable and free from pain in the arm. Thereafter her general condition slowly deteriorated. In January, 1939, a new complaint was neuralgic pain in the right lower jaw. There was no clinical evidence of bone change. In February the only change in her condition was a slight haemoptysis, and some dullness was found at the right lung base. This settled and did not recur; it might have been caused by a small pulmonary infarction, since the cardiac condition was more unsettled.

On April 5, at the Infirmary, I removed the plaster from the arm and managed to get radiographs of it (Fig. 2) and

of the lower jaw. The fracture of the arm was firmly united, but I put a light plaster collar round the limb for safety. The jaw showed metastases. The light plaster was removed at home on June 5, and both the patient and I were delighted with the free and confident arm movements. Firm bony union could be felt. By this time there was enlargement of the pyloric tumour, enlargement of liver, ascites, and marked emaciation. The patient was troubled with epigastric pain and could swallow only small quantities of fluid. She required morphine for the pain. She died one week after removal of the light plaster, having had an obstructive type of vomiting with haematemesis and signs of advanced carcinoma of the stomach. She died on June 12, one year after I had first seen her.

COMMENTARY

The clinical picture without the aid of gastric analysis, radiographs, etc., was that of carcinoma of the stomach.

The fracture of the right humerus was pathological and apparently due to metastases from a carcinoma.

The fracture was completely united after four months—confirmed clinically and by radiographs.

IAN B.-K. MACGREGOR, M.B., Ch.B.,
Assistant Surgeon, Kilmarnock Infirmary.

Torsion of an Ectopic Gestation

(WITH SPECIAL PLATE)

The case of ectopic gestation described below presents two unusual features and seems to be of sufficient interest to justify its publication. The majority of ectopic gestations do not cause severe symptoms until some complication has occurred, and a laparotomy is generally performed only when rupture of the tube or abortion has brought on intraperitoneal haemorrhage. In the present instance the symptoms that resulted in the patient's admission to hospital were found at operation to be due to torsion of the tube, which was impacted in the pouch of Douglas. Secondly, pregnancy, whether tubal or uterine, at the age of 52 years is an unexpected condition and one unlikely to be considered in differential diagnosis

CASE REPORT

A married woman aged 52 was admitted to Redhill County Hospital in April, 1939, with a history of abdominal pain which had started three days previously. The pain was described as "gnawing," and was at first generalized. Later it became more severe on the right side than elsewhere. The onset of the attack was accompanied by vomiting. About one month previously she had been admitted to another hospital on account of a similar attack. She was the mother of six children, the youngest of whom was 13 years old. Questioned after the operation she stated that she had always menstruated regularly and that she had continued to do so without any intermission, except during her pregnancies, until two months before the onset of her present illness, when she had missed a period. One month later she again menstruated "normally."

On examination she was of average build and looked somewhat young for her age. Her temperature was 97.2°, pulse 84, respirations 20. Her tongue was clean. There was marked abdominal rigidity on the right side with localized tenderness over McBurney's point. On vaginal examination she was found to have a cystocele. The uterus was normal in size. There was a fullness palpable in the right fornix and there was tenderness in the same situation. The rectum was full of hard faeces. A diagnosis was made of acute appendicitis with a probable pelvic abscess.

Operation.—I opened the patient's abdomen through a right subumbilical paramedian incision. No free fluid or pus was seen. The appendix appeared normal. A search was then made in the pelvis and revealed a mass tightly impacted in the pouch of Douglas. Some recent adhesions were separated and the mass delivered. It was then found to consist of the right Fallopian tube, which was tightly twisted on itself several times at its isthmus. The tube was distended to the size of a large hen's egg and was of a dark plum colour. Salpingectomy was performed easily and the abdomen was closed without drainage. The patient made an uninterrupted recovery and left hospital in good health.

The appearance of the haematocele at once suggested an ectopic pregnancy, though the age of the patient made this seem rather unlikely. The tube was accordingly sent for section. This shows a quantity of blood clot in the midst of which are a number of typical placental villi (see Plate).

I am indebted to Mr. J. N. Deacon, medical superintendent of Redhill County Hospital, for permission to publish this case.

FRANK FORTY, M.B., B.S., F.R.C.S.,
Surgeon, Redhill County Hospital,
Edgware.

Colles's Fracture and Backward Dislocation of the Elbow

The article by Mr. R. Salisbury Woods in the *Journal* of October 14, 1939 (p. 767), prompts me to write of a somewhat similar interesting case.

CASE REPORT

On April 18, 1939, a man aged 38 was admitted to the Oldham Royal Infirmary with a history of having fallen about sixteen feet from a ladder on to his right hand. Examination revealed a posterior dislocation of the elbow-joint. His wrist was swollen and there was pronounced radial deviation of the hand and wrist. *X*-ray examination showed marked postero-lateral dislocation of the right elbow, the radius and ulna being displaced laterally to the extent of the width of the lateral condyle of the humerus. Radiographs of the wrist-joint revealed a fracture through the "waist" of the carpal scaphoid bone, with considerable separation of the fragments. The ulnar styloid process was detached. The semilunar bone was dislocated towards the flexor surface.

Under a general anaesthetic the dislocated elbow was reduced. Hand traction was made at the wrist for about two minutes and a scaphoid non-padded plaster-of-Paris cast put on. A lead and opium dressing was applied to the elbow, and the arm was rested in a sling, with the elbow-joint extended to just beyond a right-angle because of the gross effusion. Further *x*-ray examination showed reduction of the posterior dislocation of the elbow and good position of the scaphoid fragments, but the dislocated semilunar bone was still unreduced. On the following day the plaster cast was removed. A local anaesthetic was given, novutox 2 per cent. being injected into the wrist, and manual traction was applied to the wrist with counter-traction to the forearm for a full ten minutes. Later radiographs showed that the displaced semilunar bone was reduced. A scaphoid plaster cast was reapplied. Immediate active use of the fingers was begun, and active movements of the elbow-joint were started on the fourth day.

On May 30 there was practically full extension of the elbow, with flexion limited to 60 degrees. On June 21 full flexion and extension were present. Subsequent *x*-ray films showed that the scaphoid bone was uniting, and on September 6 further radiographs disclosed good union of this bone, with slight limitation of movement at the wrist-joint. The patient was discharged from hospital on September 13—five months after the accident—with full function of the elbow- and wrist-joints.

I wish to thank Mr. H. Poston, honorary orthopaedic surgeon, for his supervision of the treatment and for permission to publish this case.

MICHAEL LENTIN, M.B.,
Senior House-surgeon, Oldham
Royal Infirmary.

Reviews

A TEXTBOOK OF PATHOLOGY

Pathology. An Introduction to Medicine and Surgery. By J. Henry Dible, M.B., F.R.C.P., and Thomas B. Davie, B.A.(Cape), M.D., M.R.C.P. (Pp. 932; 374 illustrations, including 8 plates in colour. 36s.) London: J. and A. Churchill Ltd. 1939.

There are few full-length textbooks of pathology by British authors, and the appearance of a new one is therefore in any case an important event. If its merits as the student's principal guide in this subject make a wide appeal it is something which does not happen more than two or three times in a generation, and the new work by Dible and Davie certainly will appeal. The purpose of studying pathology has never been better expressed than in their preface, and the authors' aim of enabling the student to envisage the processes underlying the clinical manifestations of disease has been admirably followed out. A novel and commendable feature is the interpolation between the sections on general and regional pathology of another entitled "Special Infections," in which infective disease is classified aetiologically. Chapters on diphtheria and anthrax, as contrasted types of bacterial infection, are followed by ten others, among the subjects of which tuberculosis, virus diseases, and infections by the pyogenic cocci are obvious choices in view of their characteristic nature and the variety of tissues which they may involve. Others have not so clear a claim to description here, and the section might well have included a chapter on the special features of infection by protozoa. Both here and elsewhere in the book the characters of the micro-organisms concerned are fully described, as are the mechanisms by which the body resists infection: indeed, for most purposes, except that of technique, this work will, incidentally, almost serve as a textbook of bacteriology.

Just as there is much to commend, there is not a little to criticize. Among matters of fact are a diagram of the renal arterial system (Fig. 27) which is anatomically incorrect, and the devastating suggestion that chronic phthisis predisposes to squamous-celled cancer of the lung. The whole subject of lung cancer is dealt with in only nineteen lines. There is much that is highly unorthodox, if not positively untrue, in the chapters on arterial disease: atheroma is not usually believed to occasion cardiac hypertrophy, as is deliberately asserted on page 566, nor, as stated on the following page, is it "the common cause of senile gangrene of the extremities"; this is a consequence to be ascribed more exclusively to Mönckeberg's sclerosis, which is described later. The doctrine that atheroma can result from raised blood pressure is also highly disputable, and its repetition by an examinee might well be detrimental to him. In describing tumours of bone the authors appear to accept the term "osteogenic" as correctly describing growths in which bone is formed, whereas it should be restricted to those of osteoblastic origin. In contrast to the usual clearness of the teaching is the highly abstruse argument which opens the chapter on diseases of the reticulo-endothelial system; the authors' natural desire to define their own opinion on a debatable subject has here made that subject too difficult for the ordinary reader. The book is easily readable, but picturesque language is rather forced in some places, and misspelt words are unduly frequent: "pacchymeningitis" occurs repeatedly, as does "empyrical," which has evidently exchanged a letter with "saprophite."

To set against these faults there are many chapters of outstanding merit, among which those on diseases of the alimentary tract, on tuberculosis, and on the causation of tumours are particularly successful. The historical data introduced into the text often add greatly to its interest. Illustration is lavish; a few drawings are over-emphatic of essential features (for example, Fig. 215), but the photographs used reach a very high standard of excellence. The book is assured of a wide popularity.

FRACTURES AND RELATED INJURIES

Fractures and Other Bone and Joint Injuries. By R. Watson-Jones, B.Sc., M.Ch.Orth., F.R.C.S. (Pp. 724; 1,040 photographs, *x*-rays, and diagrams, many in colour. 50s. net, postage 1s.) Edinburgh: E. and S. Livingstone. 1940.

This magnificent volume covers the whole field of fractures and related injuries. It is based upon a series of over 47,000 cases, and as these have been followed up at frequent intervals for long periods the methods and results described may be accepted with confidence. Moreover, every statement which is made is backed by superb radiographs and illustrated by outline drawings which leave no possible doubt of the author's meaning.

The volume opens with a general description of the principles of fracture treatment, including chapters on the mechanism of repair, the causes and treatment of delayed union, of joint stiffness, and of other complications. Perhaps the most interesting and original chapter in this section is that on avascular bone necrosis, which will, we venture to think, reveal to many surgeons the cause of ultimate failure in what had at first appeared to be entirely successful operations. There follow chapters on radiographic diagnosis, on the general principles of reduction and immobilization, and on the treatment of open and infected fractures. A short but interesting section follows on pathological and birth fractures in various regions of the body.

Fractures of the spine are described with the care demanded by their frequency and by the great changes which have taken place in recent years in their treatment, while the description of cord injuries, though brief, is adequate for the present purpose. It is, however, to injuries of the limbs that one naturally turns with the greatest interest, and here the vast experience of the author is revealed on every page. Every possible injury involving the bones or joints is described in the utmost detail and its treatment is discussed with a clearness of outlook which is quite remarkable. The author has avoided the error of describing innumerable methods and has confined himself to those which he has found useful and which are standardized in regular practice.

Where every detail has been studied with such care it is difficult to choose any subject for special reference, but the chapter on injuries of the hip stands out as a masterpiece. When it is remembered that at least fifty different methods have been described for the insertion of a Smith-Petersen pin one is grateful to the author for limiting his description to a simple and accurate technique which should satisfy the most exacting surgeon. Moreover, the difficulties that may arise and the traps into which the surgeon may fall are fully discussed, and no room can be left for doubt that the methods described are sound.

Mr. Watson-Jones has succeeded in producing a volume worthy of the Liverpool School and of his great pre-

decessors there. In soundness of judgment and sanity of outlook it could not be surpassed. The absorbing interest of the book is increased by the beauty of the illustrations, and it is assured of a very warm reception. It could not have appeared at a more opportune moment.

MANIPULATIVE THERAPY

Treatment by Manipulation. By H. Jackson Burrows, M.D., F.R.C.S., and W. D. Coltart, M.B., F.R.C.S. (Pp. 36; 30 figures. 5s. net.) London: Published by the *Practitioner*, in conjunction with Eyre and Spottiswoode. 1939.

Manipulative surgery—the authors criticize the term as tautological—has produced a spate of literature in recent years. The surgical profession can certainly no longer be accused of having neglected its study, although the number of unqualified practitioners who indulge in it is still large. The public still believe that these unqualified manipulators have some special methods or some personal touch which are more important than the knowledge of surgery and pathology, and it is not unusual for a patient to greet an orthopaedic surgeon with the statement, "I don't know whether I was right in coming to you; perhaps I should have gone to an osteopath (or a bone-setter or chiropractor)."

This little book deals simply and solely with the routine methods of manipulation used by the authors. It is based upon a series of over 800 manipulations carried out at St. Bartholomew's Hospital, so that, although others will be sure to criticize and claim that they have other and better methods, at least we have here a substantial experience. Indeed, methods should be individual; a grip or a method of applying force need not necessarily be stereotyped; a method which comes naturally to one may be awkward to another. But the descriptions and the illustrations give an excellent basic guide. The short section on general considerations is an admirable example of brevity and lucidity in which every word and phrase counts. Special points may be mentioned—for example, the advisability of re-examination immediately before anaesthesia so that the surgeon reminds himself of the range of movement and of the painful movement, the presence of a small organic basis in hysterical cases, and the necessity for mobilizing and strengthening exercises after manipulation, in contradistinction to massage and electrical treatment carried out by the masseur. Finally the dangers of and failures in manipulation are summed up in less than two pages. This book does not pretend to do a great deal, but what it includes it does well.

TUBERCULOSIS AND PUBLIC HEALTH

Tuberculosis and National Health. By H. Hyslop Thomson, M.D., D.P.H. (Pp. 244. 10s. 6d. net.) London: Methuen and Co. 1939.

Dr. Thomson states in his preface that during the last twenty years there has emerged a considerable volume of literature on tuberculosis; he has endeavoured to clarify his own views on the subject in the light of present-day knowledge, and trusts that the study may be of some service to those who, in clinical practice or investigation, are closely associated with the disease, and to others who take an interest in the national aspect of the problem. Dr. Thomson is a well-known county medical officer of health who some years back had first-hand experience of the management of tuberculosis. His study is based on a bibliography of 248 references, of which 220 are to English, twenty to American, and one to French periodicals and books; the remaining seven references to Continental work have been studied in abstracts appearing in English journals.

The sections on the incidence and significance of tuberculosis and its relations to nutrition, housing, and the milk supply are up to date, and contain much information with which every tuberculosis worker should be familiar. On the other hand, the discussions on pathological and clinical aspects of the disease contain not only clear and sound deductions but also statements that are vague, misleading, or even inaccurate. We may instance the definitions of "types of tuberculosis" and of allergy, the paragraph on chronic miliary tuberculosis, the list of "stigmata the presence of which should suggest the possibility of a primary tuberculous infection," and this sentence: "In the adult, more especially the young adult, the primary pulmonary focus is generally known as Assmann's focus." Few will agree that a reasonable estimate of the percentage of positive tuberculin reactors among adults in this country as a whole is probably 50 for urban districts and 20 for rural districts, "judging from figures available"—no such figures for the general population are in fact available in this country. And a claim the importance of which cannot be exaggerated—that there is increasing evidence that tubercle bacilli introduced via the gastro-intestinal tract produce a pulmonary primary infection in man—should not have been brought forward without stating the evidence; any evidence to this effect has, in the reviewer's belief, long been discredited.

On the other hand, praise must be given to the author's discussion of "open" and "closed" phthisis, his insistence on team work in the management of extrapulmonary tuberculosis, and such a statement as "when one is closely and continuously concerned with the clinical aspects of tuberculosis it is liable to be regarded as a morbid entity requiring special attention in relation to diagnosis and treatment, while the importance of viewing it as an index of the health standard and social conditions of the community is less likely to receive the attention it merits."

To summarize, therefore, the book gives an uncritical review of a narrow cross-section of recent work on tuberculosis, and an uninspiring account of its treatment and prevention. But it contains an excellent survey of the relations of the disease to public health in general, and therefore fulfils adequately the function, as regards this country, implied in the title of the book.

ANALYTICAL PSYCHOTHERAPY

Technique of Analytical Psychotherapy. By Wilhelm Stekel. (Pp. 408. 21s. net.) Translated by Eden and Cedar Paul. London: John Lane. 1939.

That psycho-analysis has proved its usefulness as a method of research into the mechanisms of the mind a large number, if not the majority, of the medical profession will nowadays agree, but its position as a method of practical therapy is less secure. The daily hour's treatment for two to five years can only be for the few, and all but the strictly orthodox school have sought for methods of shortening this course. One of the first of these apostates from full discipline was Dr. Stekel, who in this volume summarizes his method and experience of it. He is not guiltless of hurling abuse and ridicule at those who disagree with him, but that has been observed in other branches of the medical art. This book, as its title indicates, is a description of the course of an analysis by the author's active method, which consists in the intervention of the analyst at certain points when his "intuition" shows him that he may usefully cut short the analysand's

interminable associations and restore him to the straight path which leads to recovery. This intuitive intervention is of course a source of ridicule to the orthodox non-interventionists, and it is easy to see that it may be a method of considerable danger in inexperienced hands; but the reader is likely to be impressed, and to believe that this method, used by a physician of the ability and experience of Stekel, is a real advance.

The author lays great stress on the unconscious fight waged by the patient to preserve his illness, and all who are experienced in psychotherapy will recognize the truth of this observation. Stekel admits that the patient often wins, and indeed only succumbs as a result of his love (transference) for the physician. An interesting chapter is that entitled "Diseases of the Conscience," in which it is pointed out that the blow to the patient's conscience involved in the gratification of instinctive urges may be in some cases a worse trauma than the repression of these urges.

This book, which is excellently translated, so that it is really pleasant to read, should be studied by all psychotherapists—not that they will all be wise in following the intuitive method, but because they will profit by the intelligent and restrained treatment of the subject.

Notes on Books

The work on heat stroke by Dr. L. DÉROBERT, which will appeal mainly to the physiologist and to a lesser degree to the pathologist and clinician, represents an experimental study undertaken by him at the Institute for the Study and Prevention of Occupational Diseases in Paris with the object of determining the pathogenesis of the disorders included under the name of heat stroke. Among the subjects treated in the book are thermogenesis in the muscles, brain, viscera, skin, skeleton, blood, and lymph, the general action of heat on the cell and the organism, the regulation of heat at rest and in activity, thermolysis as the result of chemical and physical mechanisms, the former consisting in a diminution in the excretion of CO_2 and the latter in evaporation of water by the skin and lungs. The disorders in the regulation of temperature are considered under the headings of artificial hyperthermia of cerebral, peripheral, or mixed origin, fever, heat stroke and the accessory syndromes of heat stroke, sunstroke, experimental heat stroke in dogs and rabbits, the naked-eye and microscopical lesion found in this condition, and the biological changes in heat stroke. An extensive international bibliography, in which Anglo-Saxon literature is well represented, is appended. *Les Troubles de la Thermorégulation* (*Coup de Chaleur*) is published by Masson et Cie, Paris, price 60 francs.

As the third edition of Dr. A. PINEY'S *Recent Advances in Haematology* appeared in 1931, and as the subject has in the interval undergone many changes, the fourth edition (Messrs. J. and A. Churchill; 15s.) is, as the author points out, practically a new book. It contains rather fewer pages, whereas the number of illustrations, including the coloured plates, has been doubled, those of the bone marrow deserving special attention. The author's conviction is that "the future of haematology would seem to lie in the hands of the laboratory workers, but there is still ground unbroken by the old-fashioned but trusty tools of the clinician."

The recently published *Proceedings of the Seventh Session of the International Office of Military Medicine and Pharmacy*, held at Bucarest in June, 1937, contains twelve articles contributed by medical officers of eight different nations (France, Turkey, Sweden, Rumania, Switzerland, the United States, Czecho-Slovakia, and Yugoslavia). The French text of each article is followed by a summary in English. The subjects discussed are recent improvements in French barracks, treatment of wounds, organization of the medical services in France and Sweden, the creation of hospital zones in war, the utilization of civil hospitals and V.A.D. by the Swiss A.M.S., the danger of typhus, the interrelationship of medicine, surgery, and dietetics in civil and military practice, psychology in the army, the dosage of drugs, anti-tuberculosis organization in the Yugoslav army, and appliances for the transport of the wounded in the French navy. The volume is published by the Office International de Documentation de Médecine Militaire, Liége, Belgium.

Thirty-two years ago a young French paediatrician wrote a summary of his special subject promising a future skill which has been amply fulfilled. Now, after a gap of thirteen years, during which numerous treatises and contributions to the medical press have freely appeared, Professor P. NOBÉCOURT has found time to prepare a sixth edition of his *Précis de Médecine des Enfants* (Paris, Masson; 150 fr.). This volume, with over 600 illustrations, covers the field in an admirable manner. The author's well-known success as a lecturer has given him a facility for selection which is essential in a summary, and his graphic style gets over the common fault of many a synopsis, for the book is eminently readable. Since the fifth edition, which appeared in 1926, there have been many advances in paediatrics which are ably reflected in this new and completely revised version. Deficiency diseases, disorders of the blood, and virus disorders of the nervous system account for most of the new chapters, but, in addition, careful search shows that advances and discoveries in many other directions have been incorporated in existing sections. Those who have attended Professor Nobécourt's attractive clinical demonstrations will be grateful for this epitome of his views, and it is regretted that while praise can be freely given for every other aspect of this book it must be criticized in conclusion for the all too common fault among French medical publications—the absence of an index. For a book of over 1,300 pages this is an unpardonable blemish.

An Outline of Medical Psychology, by Dr. E. FRETSON SKINNER, is published by H. K. Lewis at 6s. The author sets out in this small volume to reduce the subject to its simplest terms for the benefit of the medical student. The first part is intended to introduce the student to the idea of psychology via his biological and physiological studies in very simple terms—perhaps unnecessarily simple, for most medical students could digest something a little more complex and therefore ultimately more helpful and illuminating. This initial physiological approach is suddenly abandoned never to be taken up again, for the second part is a very elementary and uninspired narrative of the Freudian doctrines of psychopathology. The third part is clinical, ending with general directions of no great clarity for treatment and the case histories of a few patients whose treatment is by no means fully carried out. This book is not likely to be very helpful to the student, but that may not be entirely the fault of the author, for the successful training of the psychotherapist will only be attained by his own often bitter experience with his patients, though this may, as the author says, be greatly helped by a personal analysis.

In the book entitled *Medical Treatment in General Practice*, which is based on the experience of ten years' teaching, Dr. D. R. DHAR, who holds several medical appointments in Calcutta, has provided a useful and up-to-date work of reference which will doubtless find a large circle of readers among practitioners and students in India. Special care has been taken to include Indian preparations in description of the diets which, according to Colonel R. N. Chopra in his foreword, are not mentioned in European or American textbooks. The value of the book has been increased by the treatment being preceded by a short account of the diagnosis and symptomatology of each disease. We have found an unusually large number of misprints in addition to those noted in the errata, especially in the names of authors and journals quoted in the footnotes, and in the prescriptions, the elements of which in many instances show a regrettable mixture of English and Latin. These, however, are comparatively trivial faults which should not detract from the general usefulness of the work. The book is published by D.M. Library, Calcutta, price 22s. 6d.

The Psychological Aspect of Delinquency (Baillière, Tindall and Cox; 2s. 6d.) is a series of six lectures given to the Bath and Bristol Mental Health Society under the chairmanship of Dr. ELIZABETH CASSON, who contributes a foreword. The only lecture worthy of note is that by Dr. J. R. Rees, which is directed to magistrates. He stresses the importance of diagnosis in all cases as a preliminary to treatment, though this treatment may take the form of punishment in or out of prison. The anti-social rebel may theoretically require psychotherapy, but may fail to benefit by it owing to his non-cooperation. The bizarre crime and that out of keeping with the character of the individual is almost always psychoneurotic in character and amenable to treatment. Dr. Rees urges the magistrate to hate the delinquent's anti-social act but not the delinquent himself.

Preparations and Appliances

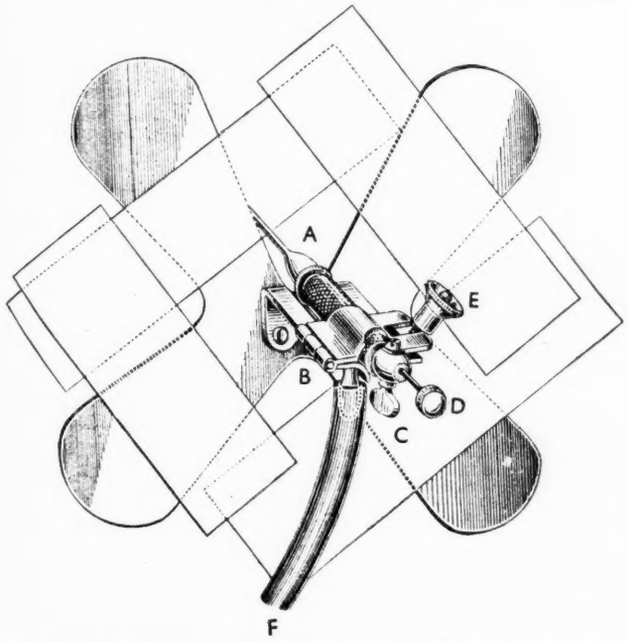
NEEDLE AND HOLDER FOR ARTIFICIAL PNEUMOTHORAX

Dr. DAVID A. HERD (Killingbeck Sanatorium, Leeds) writes:

In 1936 I devised a pneumothorax needle holder primarily for use in cases of spontaneous pneumothorax; it was also useful in cases of empyema. The benefits of that device were limited owing to the type of needles then employed, and to obviate their defects I have designed a different type of artificial pneumothorax needle and holder.

The holder consists of four pliable aluminium flanges which can be shaped and strapped to the chest wall with adhesive plaster. A grooved portion projects at right angles from the centre of these flanges and is provided with a hinged flap, B, and locking nut, E.

The needle differs from other types in having a long cylindrical barrel and lateral opening placed at right angles to the shaft, so that when placed in the groove its length



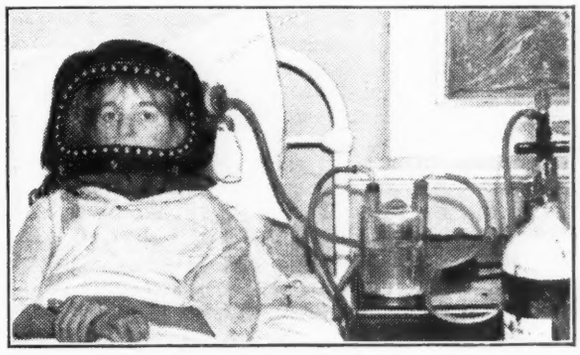
can be adjusted in accordance with the thickness of the chest wall. Needles (A) of standard pattern can be fitted to this type of barrel. This needle can be used as an ordinary artificial pneumothorax needle or in conjunction with my holder. Tap C enables stylet D to be inserted and thus clear a blocked needle without disturbing the needle or patient.

These instruments have been successfully used at the above sanatorium, and were made for me by Messrs. Charles F. Thackray, Ltd., Park Street, Leeds.

A SIMPLE OXYGEN TENT

Dr. W. HARTSTON, medical superintendent, Brumby Isolation Hospital, Scunthorpe, writes:

A simple and effective oxygen tent can be obtained at slight cost and with negligible trouble by conversion from a Government gas protective helmet. The tail piece and wire legs at the back of this helmet come away after removing the two retaining screws. The bellows and wide tubing above it are removed at the shoulder by unscrewing the metal band which fixes them to the port of air entry. Over this port is now stretched a square of rubber containing a metal nozzle—the nozzle of



a car or bicycle inner tube with its surrounding rubber does admirably—and held in place by screwing on the metal band previously removed. The skirt of the bag is tucked round the patient inside his shirt or pyjamas. The apparatus is now ready for use, and can be connected to a Wolff's bottle or a flowmeter and ice chamber and the oxygen cylinder in the ordinary way. The improvised oxygen tent can be reconverted to its original purpose as a gas helmet in the same two minutes that it takes to prepare the more frequently required oxygen tent. The photograph is by A. H. Sanders, Scunthorpe.

VITAMIN E IN CAPSULES

Phytoferol capsules are a preparation of vitamin E (British Drug Houses Ltd.). Each capsule contains a quantity of a concentrate of vitamin E that is biologically equivalent to 3 mg. of *dl-α*-tocopherol. This latter substance was synthesized last year and forms a convenient standard for concentrates which contain the natural vitamin.

Messrs. B.D.H. have prepared a booklet in which they summarize the experimental and clinical evidence regarding the action of vitamin E. During the last few years several papers have recorded striking successes in the prevention of abortion by administration of vitamin E, and there is evidence that this may also check incipient toxaemia of pregnancy. Finally, the action of the vitamin on male impotence and undescended testicles is being investigated by American authors.

VITAMIN K THERAPY

Kapilon (Glaxo Laboratories Ltd.) is a preparation of a synthetic substance (2-methyl-1:4-naphthoquinone) which has an action similar to that of vitamin K. The latter is the chicken anti-haemorrhagic factor, the separate identity of which was only established a few years ago. Last year it was found that a simple naphthoquinone derivative produced the action of the vitamin, and the natural form is now believed to be a naphthoquinone derivative. The vitamin is fat-soluble, an important source being hog's liver fat. It is concerned with blood coagulation, and its chief measurable action is to reduce the bleeding time in cases of prothrombin deficiency. The use of this vitamin in obstructive jaundice was suggested in 1935. A paper by Macfie, Bacharach, and Chance (1939) describing its actions has recently appeared in this *Journal*.[1] The authors found that the intramuscular injection of the synthetic product was of striking value in the prevention and treatment of haemorrhage in jaundice.

[1] Macfie, J. M., Bacharach, A. L., and Chance, M. R. A. *British Medical Journal*, December 23, 1939. The Vitamin K Activity of 2-Methyl-1:4-naphthoquinone.

Nova et Vetera

Dr. WILLIAM BEAUMONT

Life and Letters of Dr. William Beaumont originally appeared in 1912 on the occasion of the centenary of Beaumont's entry into the practice of medicine, for on June 9, 1812, he was granted a licence to practise physic and surgery by the Third Medical Society of the State of Vermont, as by law established. Sir William Osler twenty-seven years ago welcomed this full account of the pioneer-physiologist of the United States. This introduction has wisely been reproduced in the new edition,[1] and is now accompanied by a present-day appreciation of Beaumont's experimental work from Professor Andrew Conway Ivy, and goes on to record that at the meeting of the International Congress of Physiologists in Boston in 1929 each guest was presented with a medallion bearing the likeness of Beaumont and a facsimile of the original edition of his book. Then "William Beaumont, the frontier physician and physiologist, on this occasion, was figuratively canonized as the patron saint of American physiology." Another addition to the book in its new form is a double-page coloured plate showing Beaumont in military costume collecting gastric juice from the gastric fistula of Alexis St. Martin. This is reproduced from the painting in oil by Dean Cornwall, A.N.A., 1928, in the possession of Messrs. John Wyeth and Brother of Philadelphia. The text of the *Life and Letters* remains as in the original, and, as Professor Ivy remarks, "One truly does not know gastric physiology and pathology as one should until Beaumont has been read critically and *in toto*."

PIONEER ABDOMINAL SURGEONS

Annual orations and introductory addresses usually come under the heading of ephemeral literature, for they have served their purpose when once they have been delivered. The Bolingbroke Lecture given by Mr. Zachary Cope before the South-West London Medical Society in May, 1938, is an exception to the rule. It now appears in an extended form under the title *Pioneers in Acute Abdominal Surgery*.[2] The acute conditions are volvulus, intussusception, strangulation by a band, peritonitis associated with perforation of the stomach or bowel, and obstruction of the large intestine caused by stricture. The operative treatment of these conditions lies within the memory of those still living, though a few were undertaken in pre-anaesthetic days. The pioneers were driven to operate in sheer desperation when every other means of relief had failed. It is difficult to decide whether in the beginning the courage of the surgeon or the heroism of the patient is the more to be admired, but Mr. Cope shows how much both the surgeon and the patient have to be thankful for owing to modern advances. He tells, for instance, of the French wine merchant in 1776 who, with a stricture of the large intestine, was advised, laxatives having failed, to swallow two pounds of quicksilver in the hope that the weight of the metal might overcome the obstruction. A month later Pillore of Rouen made the first recorded artificial anus and the patient survived for twenty-eight days. The mercury was found at the necropsy lying unchanged in the last convolution of the jejunum. But this was nothing to the treatment which a patient might have to undergo before an operation was thought to be imperative. There was a stout-hearted lady of 64 in the year 1820 to whom—

"All the medical resources of art were exhausted in fruitless attempts to procure evacuations. Salts, senna, aloes, colocynth, jalap, scammony, gamboge, elaterium, calomel were given in their largest doses and variously combined: castor oil was also administered in doses of three ounces; and as vomiting was by no means frequent these medicines were commonly retained. Injections of every sort and by different means were also administered. It was attempted to pass a flexible catheter beyond the obstruction through which clysters might be thrown into the bowel above the seat of it. She was once bled without any relief to her symptoms, and when all other means had failed some large doses of laudanum were given on the supposed possibility of the existence of spasm. Finally the surgeon made an opening into the colon in the left iliac region, and after a stormy convalescence the patient recovered. The surgeon when reporting the case adds complacently the operation has afforded her a moral as well as a physical advantage. She is now at no loss for an interest, and is provided with something to think of for the rest of her life."

This extract shows that Mr. Cope has provided a readable as well as a useful little book. He has gone to original sources for his information and has been at great pains to find portraits of the pioneers, from J. L. Petit in the eighteenth and F. T. Paul of Liverpool in the twentieth century. The portraits are well reproduced by the publishers. The sources of information are indicated and it is thus easy to trace the beginning of any of the operations mentioned. There is an index of names and another of subjects.

THE NATIONAL HEART HOSPITAL

A Multifarious Founder

The early history of the National Hospital for Diseases of the Heart, which was founded in 1857, the year of the Indian Mutiny, shared the disturbed atmosphere of its birth. As Captain Robert Whitney says in his pamphlet "The Place of Hearts" (obtainable from the hospital, Westmoreland Street, W.1, price 2s.), the pious founders of long-established hospitals are not likely to be embarrassed by records of their past, but the story of the adventurer, Dr. Eldridge Spratt, who combined in his own person the offices of founder, medical staff, treasurer, chairman, and secretary, was far otherwise. This Gilbertian arrangement worked with perfect harmony and admirable speed so long as decisions alone were needed for ordering equipment, drugs, and food; but it appeared in another light when demands for payment reaching Dr. Eldridge Spratt, the physician, were passed on to Mr. Eldridge Spratt, the secretary, for settlement. A committee was set up by the founder and the times became stormy, resignations were frequent, and on occasions the founder only was present at the meetings; he had many schemes for raising money, and acted on the principle that charity begins at home. On the night of January 18, 1875, he broke burglariously into the hospital and carried off instruments, furniture, pictures, books, and a large quantity of lead in a removal van, and some of the spoil was never recovered. For the first three years the hospital "staff" did not overwork himself, for the average daily attendance of patients was a little more than one; but in 1871 the medical staff was doubled by the appointment of Dr. David Leslie as physician.

The hospital began at 67, Margaret Street, Marylebone, then moved to Newman Street, and in 1874 came to more or less rest at 32, Soho Square for forty years till January, 1914, when the present hospital was opened on the site of St. James's, Westmoreland Street, the church to which large congregations were drawn by the Rev. H. R. Haweis, an original and somewhat unconventional preacher, who rivalled the Rev. Page Roberts of Vere Street in attracting the medical inhabitants around Cavendish Square. Haweis had in 1868 been appointed chaplain to the hospital, but resigned in a month "as a result of various rumours connected with the hospital and also appertaining to Dr. Spratt's private character." Since 1914 the hospital has attained such a high position that it can afford to smile at the frailties of its founder.

[1] *Life and Letters of Dr. William Beaumont*. By Jesse S. Myer, M.D. Introduction by Sir William Osler, Bt., M.D., F.R.S. (Pp. 327; illustrated. 21s. net.) London: Henry Kimpton. 1939.

[2] *Pioneers in Acute Abdominal Surgery*. By Zachary Cope, M.D., M.S., F.R.C.S. (Pp. 135; illustrated. 7s. 6d. net.) London: Oxford University Press. 1939.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY DECEMBER 30 1939

RESULTS OF TREATMENT OF GASTRIC CANCER

It is accepted that about one-third of malignant tumours are situated in the stomach, and that surgical excision is at present the only known means of cure for cancer in this site. Any study of end-results in the treatment of gastric cancer thus resolves itself into an analysis of surgical methods and results. Since the experience of any individual surgeon or even a group of surgeons in one hospital is both limited on account of numbers and dependent on the skill and technical ability of the surgeon, his assistants, and the radiologist who contributes to the diagnosis, a wider field is necessary for statistical purposes. Livingston and Pack, two New York surgeons, have brought together for review the great body of data published in the last sixty years, comprising nearly one thousand publications, and have submitted them to critical study and analysis. Their results covering reports of 14,000 gastrectomies for cancer are now available.[1] Billroth in 1881 successfully removed an advanced colloid carcinoma from the stomach by a procedure to be classed as a subtotal gastrectomy, but in the first five partial gastrectomies for cancer one patient alone survived, and that only for four and a half months. Billroth later expressed dismay at the high general mortality and gave it as his opinion that not more than one in two hundred cases showed conditions suitable for an attempt at resection, though later he raised his estimate as to operability to one in fifty or sixty. Since that time it is possible to trace a gradual evolution of improvement in results, and recent articles in this country and elsewhere on the subject of gastric cancer cures set entirely new standards of attainment. Reports have been published of 20 per cent. ten-year cures among all patients leaving the hospital after gastrectomy for cancer. About one-third of immediate survivors of gastric resection for cancer are alive at the end of three years, one-fourth are living at five years, and one-fifth live beyond ten years from the date of discharge from hospital. Since steady and progressive advances have been made during the six decades since the first gastrectomy for cancer, it is reasonable to believe that the limits of attainment in the surgical management of resectable gastric cancer have not yet been reached; certainly recent progress has exceeded that of any previous period of surgical activity. The experience of one of our own surgeons (whose results are included in Livingston and Pack's series) may be cited. Sir James Walton[2] found over a thirty-five-year period that the operability rate has increased from 28 per cent. at the time of the last war to 44 per cent. in the years 1928–35. Radical operation was possible in 224 of his 572 cases seen—over one-third of the total number.[3]

In gauging the end-results much confusion has arisen from failure to distinguish between resectable gastric cancer and surgically incurable gastric cancer. From two-thirds to three-fourths of gastric cancers are unresectable when first seen, while at no time in surgical history and at no point in the world have the definitive cures of gastric cancer ever exceeded 5 per cent. of the total number of patients with the disease. At present, therefore, 95 per cent. or more of all afflicted die of the disease within less than two years. We have thus to envisage a disease within a disease, the total number of patients having cancer of the stomach as distinguished from the resectable fraction of this total. This resectable gastric cancer as a separate entity is still one of the most common forms of cancer and is highly amenable to surgical therapy, which offers a distinctly favourable outlook for definitive cure. Livingston and Pack point out that it is wrong to allow the outlook for the disease as a whole to dominate the picture. To state that a patient with a resectable gastric cancer has but a 1 to 5 per cent. chance for a long-term survival when in reality this is a 20 to 50 per cent. chance of cure is a serious error.

Further analysis shows that the attained cures are represented by the total cases, less those found to be inoperable, less those that are unresectable, less those that do not survive resection, less again the natural rate of decline among immediate resection survivors. A large part of the loss of numbers in survivors after discharge from hospital after resection is due to deaths from natural causes, which are high for the age group associated with gastric cancer. The number and size of each of the "loss factors" preclude both now and for the future the attainment of large percentages of long-term cures among all patients seen. But for resectable gastric cancer the situation is relatively simpler; cures are resections performed, less the resection mortality, less again the natural rate of post-resection decline in survivors. The resectable patient has thus but two hazards: the resection risk and the post-resection death rate from recurrence or natural death. The former hazard is under surgical control, while the latter rests largely in the hands of Nature

[1] *End-results in the Treatment of Gastric Cancer: An Analytical Study and Statistical Survey of 60 Years of Surgical Treatment.* By Edward M. Livingston, M.D., and George T. Pack, M.D., F.A.C.S. London and New York: Paul B. Hoeber. (3 dollars.)

[2] Walton, James, *Medical Society's Transactions*, 1936, **59** 182.

[3] Idem, *British Medical Journal*, December 9, 1939, p. 1127.

and can be but little affected. The training of surgeons and surgical teams to work under optimal conditions is necessary and attainable. But in order to obtain a small number of long-term cures operations in large number are a necessity. Further, the operability rate proves of greater significance than the rate of resection mortality. This is seen from the fact that a 50 per cent. loss from inoperability means a loss of half the patients from all possibility of cure, while a 50 per cent. loss from resection mortality will mean but numerically few patients of the total number with the disease.

The problem for the community, then, is the finding of resectable gastric cancers. They are numerically common, for necropsies reveal that even at the time of death from gastric cancer approximately one-fourth of these tumours are still confined to the stomach or to the stomach and immediately adjacent lymph nodes; and as Sir James Walton has found, resection is possible in more than one patient in every three. All patients with the disease, except those unequivocably proved to be unresectable, should be surgically observed and a large percentage surgically explored. Resectability or unresectability is often ascertained with complete certainty only through surgical exploration. But the role of the medical practitioner in bringing the patients early to investigation of equivocal symptoms in those of cancer age may equal in importance the role of the skilled surgeon. Unless after full investigation growth can be definitely excluded an operation should be considered.

INDIAN HEMP AGAIN

Professor Robert P. Walton of the University of Mississippi has produced a timely and elaborate monograph on "America's new drug problem."[1] The hemp plant, *Cannabis sativa*, utilized from time immemorial for the manufacture of fibre and rope, from which for a thousand years in the Orient a narcotic has been extracted and largely used, has within the last two decades provided an anxious problem in the Occident. It was omitted from the *British Pharmacopoeia* of 1932. Professor Walton discusses the history of Indian hemp, its use and abuse, the pharmacology and therapeutics of the drug derived from it, the growth and extension of the "hashish vice," and more especially the modern development in Western countries of the habit of smoking "marihuana" cigarettes. The acute and chronic effects on mind and body of the ingestion of the drug are given and its pharmaceutical and chemical qualities studied. The work receives commendation in a foreword by Professor Geiling of the University of Chicago for its value to the psychiatrist, the criminologist, and the sociologist as an authoritative account of a drug "which already has a long and dishonourable history and now is again engaging attention as the result of an increasing addiction to its use in modern civilized countries."

The use of cannabis as a narcotic under the names of bhang, ganja, charas, or ma can be traced back in parts of Asia to A.D. 950, though doubtful references have been traced in Homer, the Old Testament, and Pliny. Its euphoric properties—mental exaltation, and consequent oblivion to miserable surroundings—led to its widespread acceptance, either by smoking or oral ingestion of the crude flowering tops or their contained resin. The ascription of the word "assassin" to addicts of hashish by DeSacy is disputed by other philologists. Writers like Dumas (in his *Count of Monte Cristo*) and Baudelaire (from his own experience) invested hashish addiction with literary glamour. Gautier, from his adventures in the Quartier Latin with his colleagues, graphically described the hallucinations of time and space, the beatitude and hilarity which hashish intoxication provided "as a synthetic escape from bourgeois environment." It seems that the social evils resulting from the "hashish vice" attracted little attention before the nineteenth century. It is related that Napoleon's generals, following the Egyptian expedition, made abortive efforts to eradicate the evil. It was not until 1840 that the use of cannabis therapeutically was recognized in Europe, and until 1910 that its non-medical use began to spread elsewhere than in the Orient. In Mexico, where the hemp grows wild, it is related that the drug was eaten, drunk, and smoked at the close of last century. It is, however, since 1910 that the smoking of hashish in the form of marihuana cigarettes has attracted attention in the State of New Orleans. The habit spread like wildfire. Thousands of kilogrammes of the "weed" were imported annually. An international group of dealers acted as a distributing centre and reaped large fortunes. The trade extended northwards, followed by a "crime wave." State after State succumbed to the traffic. Cabarets and night clubs and the underworld became ready purchasers of the drug and peddlers invaded the schools selling marihuana cigarettes to children. From 1927 until the present year legislative measures have been adopted in State after State with a view to suppressing the evil by confiscating "the weed" and punishing traffic in it by fine and imprisonment. In New York in 1934 there were 300 convictions for violation of the Marihuana Law, and 170 tons of the cannabis plant were seized in 1935. In Harlem there are said to be hundreds of dens where marihuana is smoked. Since 1931 the traffic has invaded Canada; cigarettes reached Montreal from New York and shipments of hemp were arriving from the West Indies and West Africa. Ottawa and Toronto claimed their

[1] *Marihuana: America's New Drug Problem. A Sociologic Question with its Basic Explanation Dependent on Biologic and Medical Principles.* By Robert P. Walton. J. B. Lippincott. (12s. 6d.)

addicts and the use of marihuana is said to be very popular on the Pacific coast.

It was largely on representations from Egypt and South Africa that Indian hemp and its galenical preparations were brought under national and international control. Although hints were made that these should be included in the Hague Opium Convention of 1912, it was not until the Geneva Convention of 1925 that this was given effect. In Egypt, Russell Pasha has waged vigilant warfare against hashish; of 500 kilos seized in 1937, more than 400 were imported from abroad through Port Said, Alexandria, or Suez, and Russell has warned against any relaxation of control. Professor Walton's monograph is an opportune addition to the information needed for the international campaign against narcotic addiction, more especially in its most modern and insidious form of marihuana.

Colonel R. N. Chopra, M.D., and Captain G. S. Chopra, M.B., have recently contributed to the *Indian Medical Research Memoirs*[2] an exhaustive research on the present position of hemp-drug addiction in India. The history of the cultivation of hemp and the distribution and control of its production are related. The social and religious associations of its use and its employment for euphoric and aphrodisiac purposes are discussed. As the result of an analytical study of 1,238 addicts to hemp the authors conclude that while small occasional uses of the drug may do little harm continued and excessive indulgence leads to general debility, premature decay, mental derangement, and is, in some cases, conducive to crime.

AXILLARY THROMBOSIS

No doubt in large measure because of the work of Leriche and his co-workers at Strasbourg, French medical literature suffers from no lack of contributions on vascular surgery. E. Roelsen[3] of Copenhagen has recorded in the *Lyon Chirurgical* seven cases of so-called primary subclavian or axillary venous thrombosis from the university clinics of Copenhagen, and discusses the cause, clinical features, and treatment. Sir James Paget[4] in 1875 appears to have been one of the first to describe the condition, but he regarded it as of gouty origin. Von Schrotter[5] was the first to describe the post-traumatic variety. The majority of cases appear to be of this nature, and, as one might expect, the right subclavian or axillary vein in young or middle-aged men is most often involved. Cases are met with, however, in which no preceding muscular strain could be held responsible, and which, therefore, in contrast with the post-traumatic ones, might be described as spontaneous. One such case was recorded by J. C. Ross[6] in 1933 of a man aged 27 who awoke one morning to find the condition fully developed. There is usually a history of muscle strain, such as might be caused by using a screwdriver with the arm in an awkward position; swelling of the arm occurs; the superficial veins are distended; and the axillary vein may be palpable as a tender cord. There are no pyrexia, no constitutional effects, and no demonstrable changes in the blood. The Wassermann reaction is negative. Roelsen advisedly uses the expression "so-called thrombosis" of the subclavian and axillary veins, because in twelve of the reported cases the vein was found to be thrombosed but in nine others it was free from clot, while fascial investing filaments were found adherent to the surface of the vein. A number of cases have been operated on, though most are found to clear up if the arm is put at rest in abduction for a week or longer. Roelsen illustrates his paper with some infra-red photographs which show well the relatively greater superficial venous network on the side of the lesion. Numerous theories of causation have been suggested. Roelsen favours Cottalorda's view that there is primarily venous spasm following some form of stimulus applied to the perivenous sympathetic nerve net, and when thrombosis is present this is secondary to the venous spasm. It is suggested that if resolution does not soon follow the placing of the part at rest the vein should be exposed, freed from its adherent fascial coverings, and stripped of its nerve net (perivenous sympathectomy); and that if this is not effective a segment of the vein should be excised. It is perhaps rather early to assess the value of these operations. Good results have been claimed for them, but probably most British surgeons would not resort to them until after a prolonged trial of conservative measures, and, indeed, the condition usually responds so well to rest and abduction that any more active treatment should only very rarely be necessary.

HYPOTHALAMIC LESIONS IN PEPTIC ULCER

The work of Dodds and co-workers,[7] showing that injection of extracts of posterior pituitary may lead to acute ulceration of stomach and duodenum, has recently been continued by Nedzel,[8] who reports the results of injecting sixty-two dogs with 20 pressor units of pitressin per 5 kg. of body weight twice a week over a period up to six months. Twenty-three of these animals had lesions of the stomach and duodenum ranging from a small injury to a large ulcer. These lesions were most easily produced in March, April, and May, and Nedzel suggests that this may bear some relation to the frequent clinical complaint by ulcer patients that cold or changeable weather precipitates the onset or return of symptoms. Nedzel's findings lend weight to the present tendency to modify Virchow's vascular theory of ulceration by invoking functional spasm of mucosal vessels and auto-digestion. In a review of the acute gastric disturbances and lesions following hypothalamic stimulation, the subject of a Hunterian Lecture by Heslop in 1938,[9] Vonderahe[10]

[2] July, 1939. Calcutta: Thacker, Spink and Co. Rs. 4 or 5s. 4d.
[3] *Lyon. chir.*, 1939, **36**, 4:385.
[4] *Clinical Lectures and Essays*, 1875, 306, London.
[5] Quoted by Cadenat, *Paris méd.*, 1920, **10**, 253.
[6] *British Medical Journal*, 1933, **2**, 525.
[7] *Lancet*, 1934, **2**, 918; and 1935, **1**, 1099.
[8] *Arch. Pathol.*, 1939, **26**, 988.
[9] *Brit. J. Surg.*, 1938, **25**, 884.
[10] *Arch. Neurol. Psychiat.*, Chicago, 1939, **41**, 871.

describes pathological changes of a haemorrhagic nature in the diencephalon and medulla in fourteen patients who died from acute complications of peptic ulcer. The haemorrhages were in the anterior hypothalamus at the level of the hypothalamic sulcus, involving the grey matter of that area and of the superior paraventricular nuclei; lower down similar changes were seen in the dorsal motor nucleus of the medulla. Adjacent areas with the same blood supply were unaffected. In a control series of thirty-five brains no such haemorrhages were found in thirteen, whereas in the others haemorrhages were particularly marked in persons dead from irritative lesions of the abdominal viscera and in some cases of diabetes mellitus. In these control investigations, however, the pattern of distribution of the haemorrhages differed from that found in peptic ulcer. Vonderahe suggests that strong afferent stimulation from visceral areas may lead in the end to irreversible organic changes in the nervous system, and suggests that "many of the sequelae following recovery from a severe attack of peptic ulcer—the irritable pulse rate, the increased sweating, the signs of 'sympathetic imbalance'—all point to injury in the parasympathetic centres of the dorsal motor nucleus of the vagus nerve, while quick fatigability, irritability, emotional changes, and alterations in regulation of metabolism, sleep, and temperature indicate injury to the thalamus and hypothalamus. To say that such manifestations are merely neurotic is frequently untrue, and injustice may be done by not recognizing an organic handicap." While agreeing that his findings may represent a contribution to our uncertain understanding of the pain of ulcer, clinicians will probably join issue with him in his conclusion, quoted above, on the ground that the "sympathetic imbalance" of ulcer patients, for the most part, long antedates the ulcer, and is related to the pre-existing "diatheses" described by Hurst and to the psychological characteristics noted by Davies and Wilson and others. The acute abdominal complications of peptic ulcer are also perhaps more notable for the subsequent —unfortunately often temporary—improvement of the patient rather than the reverse. Vonderahe's interesting findings may perhaps be related by future investigation to Sir Henry Head's[11] observation of areas of "referred" hyperaesthesia of the skull in patients with severe visceral disease.

EXPERIMENTAL ULCERATIVE COLITIS

Drury and Florey were the first to graft portions of the colon of animals into the skin so that the mucous membrane was exteriorized, and they have published observations on the vascular reactions. The mucous membrane of these grafts is easily susceptible to surface irritation. Normally there is a mucous covering, and, with careful dressing to protect this, the mucous membrane of grafts which have been on the surface of the skin for many months may present microscopical appearances identical with those of the healthy bowel wall. Prolonged exposure of the grafts to the ordinary friction of everyday life gave rise to inflammatory changes, which, however, were healed readily with careful attention. After a dressing is placed on the surface some mucus is formed, and this apparently protects the mucous membrane from further irritation. Irritation is not the sole stimulus to secretion of mucus, since isolated loops of colon produce more mucus when cathartics are given, which affect the remainder of the colon. Lium,[1] in some observations on the processes of inflammation and healing in colonic grafts, noted that chronic surface irritation caused by leaving the grafts without dressings for forty-eight hours led to muscular spasm and an initial copious outpouring of mucus, which was followed by a more watery secretion when the goblet cells were exhausted of mucus. Muscular contractions induced in the graft —by rubbing, by applying acetylcholine after intravenous injection of prostigmin, or by intravenous injection of Shiga dysentery toxin, the action of which is to produce violent spasm of the bowel muscle—resulted in oedema, petechial haemorrhages, and superficial ulceration of the mucous membrane of the graft. These changes were not due to local alteration of the circulation through the graft—that is, to ischaemia alone—unless accompanied by muscular contraction. The author suggests that spasm may be a prime factor in the causation of ulcerative colitis. Ulceration is found to occur in the colon proximal to an obstructive lesion; below the obstruction the mucous membrane is normal. Ulcerative colitis may be conceived as a specific reaction to a number of influences which can initiate spasm of the colonic musculature. These include possible over-activity of the parasympathetic nervous system, infections such as dysentery, and vitamin deficiency. Once the colon becomes spastic it is potentially an organ that can produce severe damage to its own surface structures, for the exhaustion of mucus-secretion together with nutritional deficiency may delay the healing processes. The author's experimental findings would conform with those arrived at clinically by von Bergmann—namely, that in the evolution of ulcerative colitis a sequence can be traced from spastic colon and mucomembranous colitis before ulceration occurs. Though suggestive, these observations of Lium need confirmation.

DENTAL FLUOROSIS

For some years attention has been directed to a dental disease, characterized by a mottling of the enamel of the teeth, which has been traced to the presence of an appreciable quantity of fluorine in the drinking water. This has been seen particularly in certain regions in the neighbourhood of the Rocky Mountains, U.S.A., but it has also been observed in Africa, Australia, Argentine, Canada, Italy, and, nearer home, at Maldon in Essex. The effect of minute quantities of fluorine (one part per million) in domestic water has already been commented upon in these columns,[2] and observations have been published recently[3] on the existence of dental fluorosis in England, Australia (Queensland), and the United States. The first sign of the disease is the formation of a brownish substance, usually on the

[11] *Brain*, 1893, **16**, 1 (and subsequent papers).

[1] *Arch. intern. Med.*, 1939, **63**, 201, 210.
[2] *British Medical Journal*, 1939, **1**, 1907.
[3] *Bull. Off. int. Hyg. publ.*, 1939, **31**, 855, 862, 866.

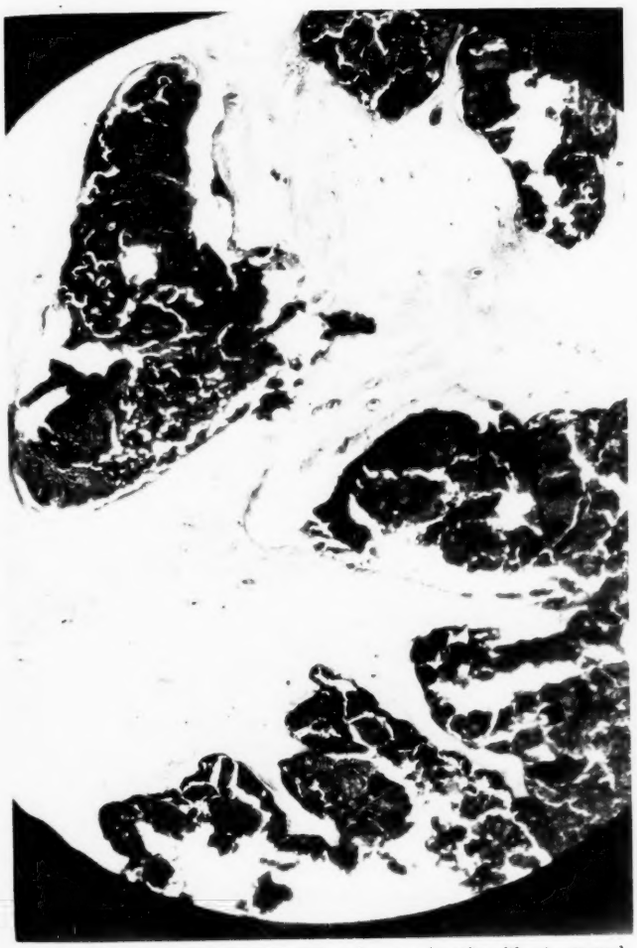


FIG. 1.—Photomicrograph showing gritty calcareous deposits without surrounding inflammatory reaction. (Subacute stage.)

FIG. 2.—Photomicrograph showing confluent cheesy calcareous deposit with surrounding inflammatory reaction. (Acute stage.)

FIG. 3.—Roentgenogram of case of calcifying tendinitis with needles inserted for irrigation treatment.

FIG. 4.—Same case as Fig. 3 a few days after irrigation, showing disappearance of deposit.

W. B. GABRIEL: HAEMORRHOIDS

FIG. 1.

FIG. 2.

FIGS. 1 and 2.—Prolapsed and sloughing internal haemorrhoids in a man aged 26, showing appearance at first examination and after seven days' expectant treatment at home. Subsequently treated by injections.

FIG. 3.

FIG. 4.

FIGS. 3 and 4.—Prolapsed and thrombosed internal haemorrhoids in a woman aged 25, with much external thrombosis and oedema, before and after seven days' expectant treatment in bed at home. Later treated by injections. [The photographs were taken by Mr. H. J. R. Bussey at St. Mark's Hospital.]

W. H. SHEPLEY AND J. S. McGREGOR: ELECTRICALLY INDUCED CONVULSIONS IN TREATMENT OF MENTAL DISORDERS

FIG. 1.—Instrument panel.

FIG. 2.—Electrodes.

WILLIAM MORE: FOETAL HYDROCEPHALUS

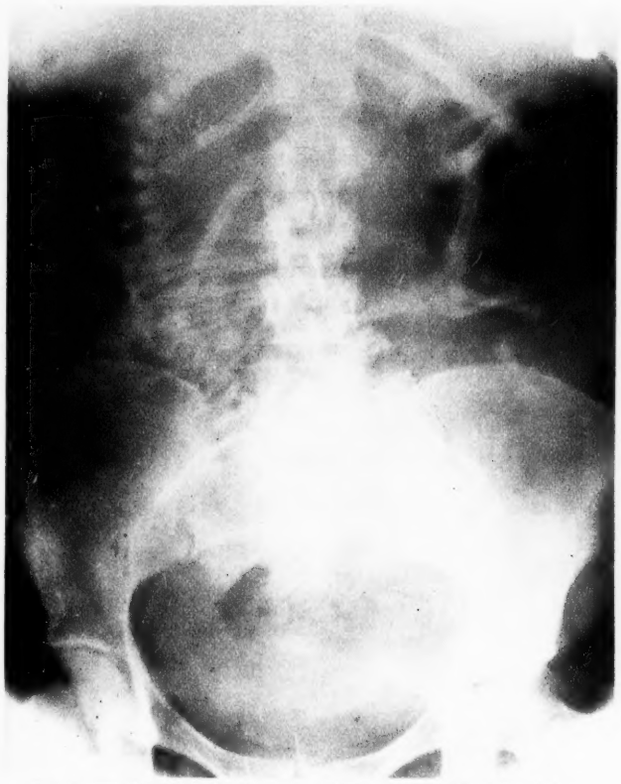


FIG. 1.—Radiograph showing the condition of foetal hydrocephalus.

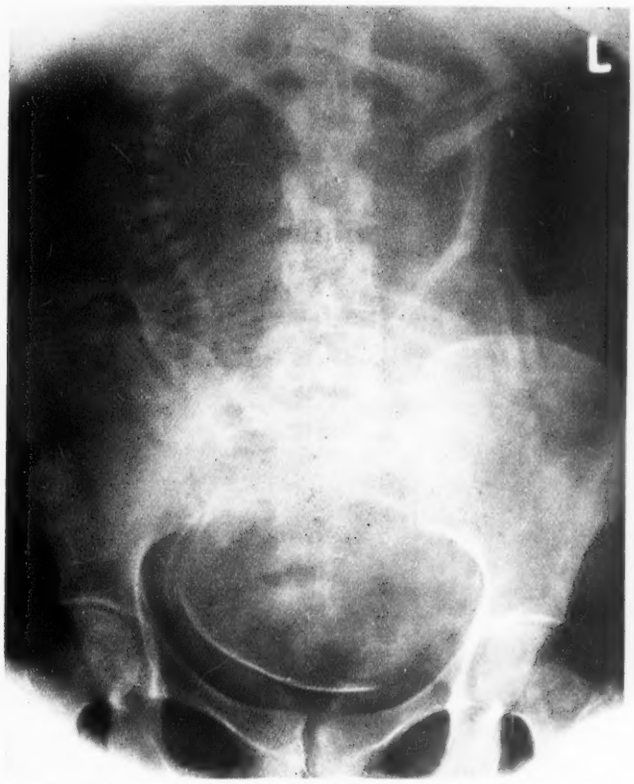


FIG. 2.—Radiograph showing the appearance of the skull after aspiration of cerebrospinal fluid.

IAN B.-K. MACGREGOR: UNION IN PATHOLOGICAL FRACTURE DUE TO METASTASES FROM GASTRIC CARCINOMA

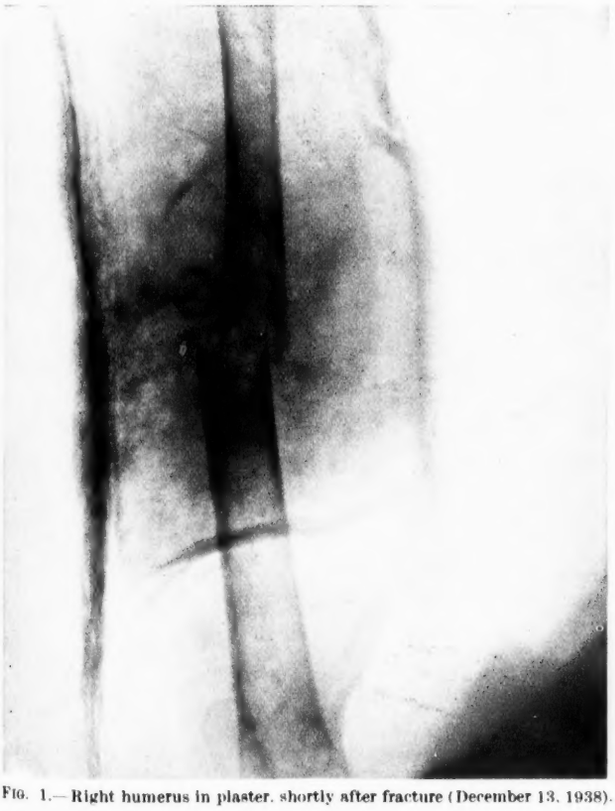


FIG. 1.—Right humerus in plaster, shortly after fracture (December 13, 1938).

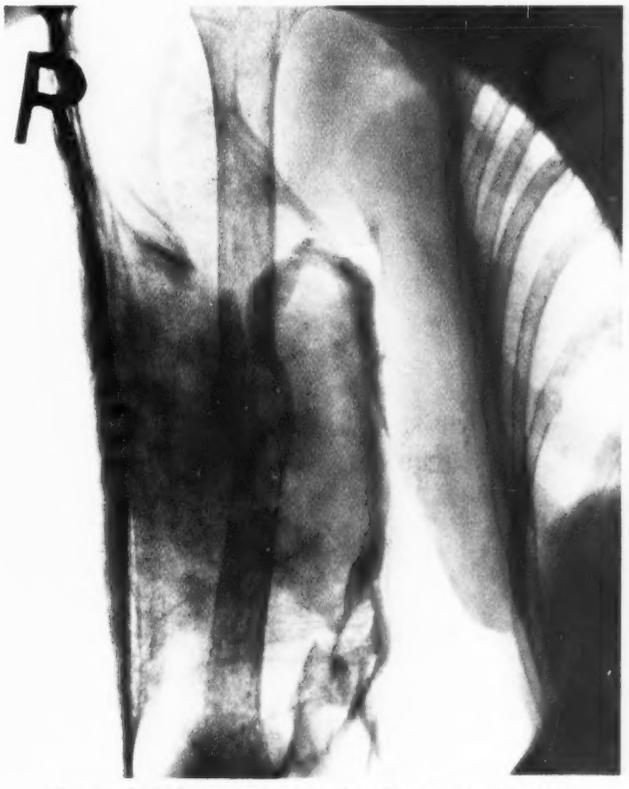


FIG. 2.—Right humerus, showing union of fracture (April 5, 1939).

E. N. CALLUM: FRACTURE-DISLOCATION OF CERVICAL SPINE

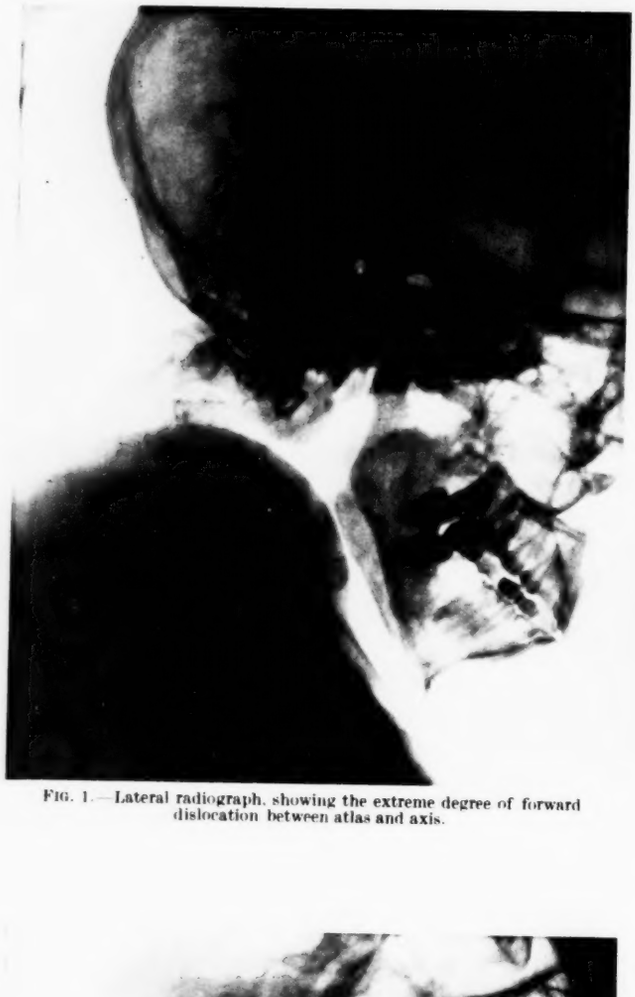


FIG. 1.—Lateral radiograph, showing the extreme degree of forward dislocation between atlas and axis.

FIG. 2.—Radiograph showing result of manipulation.

FIG. 3.—Radiograph taken three months later, showing what appears to be a bony mass extending from body of axis to basi-occiput.

FRANK FORTY:
TORSION OF AN ECTOPIC GESTATION

Photomicrograph of section of Fallopian tube showing placental villi. (Magnification × 70.)

labial side of the front teeth, taking the place of a deficient deposit of enamel. The result is that the teeth appear irregularly pitted with shallow cavities more or less filled with food debris. Not all the teeth are affected, and the condition is often confined to those at first attacked. In the Rocky Mountains region, where the subject has been closely investigated, only those children were found to be affected who were born in the district where fluorides were present in the water supply or who lived in that district during the period of enamel formation. No further cases occurred after a change over to a fluoride-free water supply. Ainsworth[4] observed dental fluorosis in a certain number of school children (aged 5 to 15 years) at Maldon, noting that their dentures were, generally speaking, good and less carious than was usual among council school children. It was found histologically that the pitting was due to loss of enamel and not to deficient formation, and that in areas where fluorosis was endemic the potable water contained approximately 5 parts per million of fluorides as against a tenth of that quantity in other areas. Bowes and Murray[5] have also published a report on the "mottled teeth" at Maldon, in which they discuss the quantitative composition of fluoritic teeth in the human subject and in experimental animals. They suggest that the pasty whiteness of such teeth is the result of deficiency of iron in their composition. Dean[3] states that among school children living in districts in the United States where fluorosis is endemic there is less dental caries than in districts where domestic water supplies are relatively free from fluoride; he suggests that dental caries may, to some extent, be controlled by the nature of the potable water supply. Fluorosis identical in all respects with that seen elsewhere has been observed by F. W. Clements[3] in a number of districts in the interior of Queensland (Australia). The regions concerned are those where the main water supply is derived from deep bores (3,000 feet) and contains from 1.6 to 3 parts per million of fluoride. In other areas the water supply is from surface wells or the river, and in these the children are free from the disease.

THE SITE OF ANTIBODY FORMATION

The much-debated question of where antibodies are formed is only part of the larger problem of the source of serum proteins generally. To attribute this function to the liver, an organ already, it would seem, overburdened with multifarious supposed activities, is easy but unconvincing, and now known to be incorrect to the extent that other tissues are certainly involved as well. All of these tissues, the liver included, contain reticulo-endothelial cells, and it is a reasonable hypothesis that these cells form the globulins of which antibodies consist, if not others as well. This idea was indeed current before certain evidence now available existed to support it, since it was well known that these cells phagocytosed bacteria and other antigens, and the specific antibody to which these gave rise could only be supposed to be formed at the site of their destruction. To have brought this process under direct visual observation, confirming its reality and to some extent following its intimate mechanism, is the claim now made by Florence Sabin.[1] This achievement was made possible by the use of a "marked antigen"—that is, an antigenic substance the particles of which are recognizable microscopically in the tissues. The substance used was the alum precipitate from an azo-dye—egg-albumen compound synthesized previously by Heidelberger and Kendall for the quantitative study of antigen–antibody reaction by means of colorimetry. Suspensions of this compound were injected into rabbits by various routes, and it could then be identified easily in the cytoplasm of phagocytic cells of the reticulo-endothelial system, the situation of these cells naturally depending on the route of the injection. Two essential facts emerge from the numerous details of a study of the subsequent behaviour of these cells. One is that the disappearance of the dye-protein from them after apparent digestion in a vacuole coincides with the appearance of antibody in the circulating blood. The second is that at this stage there is a profuse detachment of fragments from the surface of these cells. This shedding of "surface films" is a function of the normal macrophage, and its observation was what led Ranvier to give to these cells the name "clasmatocyte." Sabin concludes that this is the mechanism by which these cells liberate globulins, and adduces a further argument from embryological data which supports the same conclusion. The normal process of globulin formation by reticulo-endothelial cells is thus accelerated and qualitatively altered by the phagocytosis of an antigen. Sabin goes so far in final conclusion from these observations as to define an antigen as "a substance which can specifically modify the synthesis of the cytoplasm of the cells of the reticulo-endothelial system." This is a far-reaching and most important conclusion, which one would hesitate to accept in full from any less experienced observer, since, although the serological data concerned are exact enough, the rate of disappearance of particles from cells in living tissue is scarcely amenable to quantitative statement, and it is on the correlation of these two kinds of observation that the conclusion depends. It nevertheless bears the stamp of truth and accords well with all other knowledge of the subject. That an important constituent of the blood is formed by the disintegration of shed particles of cell cytoplasm rather than by expulsion from cells in an already dispersed form is a novel idea, and it naturally raises the questions whether other serum proteins are formed in the same way, and whether a similar mechanism takes part in other syntheses in the body.

The Minister of Health and the Secretary of State for Scotland have jointly appointed Dr. Edward Ellice Henderson, a medical officer of the Ministry of Health, to undertake the duties of Inspector of Anatomy in England, Scotland, and Wales.

[4] *British dental J.*, 1933, **55**, 233.
[5] Ibid., 1936, **60**, 556.

[1] *J. exp. Med.*, 1939, **70**, 67.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

FRACTURES ROUND THE ANKLE-JOINT

BY

ERIC I. LLOYD, M.B., B.Ch., F.R.C.S.

Fractures round the ankle-joint are among the commonest of lower limb injuries, and their treatment is a matter of such overwhelming importance that every doctor should know as much as possible about it, so that he can either decide to treat these cases—with a full knowledge of his responsibility—or get such specialized assistance as circumstances permit. These fractures used to be treated in bed on a splint for six weeks with the minimum of reduction and the maximum of rest. Everyone now knows that a "walking plaster" is the proper thing, but the urgent necessity for obtaining and keeping exact reduction is less generally realized. There are still occasions when a patient's future is irreparably blighted by a good plaster worn for six or eight weeks on a very ill-reduced fracture. It is unfortunate that a patient in plaster can often bear weight with comfort on a fracture which is not in good position.

Classification

Pott's fracture was a term originally applied to fracture-dislocations of the ankle in which the foot was displaced outwards upon the leg. The advent of *x* rays has permitted more exact diagnosis and encouraged division of ankle-joint fractures into groups which were not recognized by Pott (1714–89). Ashurst's classification (1922) divides ankle-joint fractures, according to their method of production, into external rotation (61 per cent.), abduction (21 per cent.), and adduction (13 per cent.) fractures, the remaining 5 per cent., which include compression fractures, being atypical forms. Fig. 1 shows this diagrammatically, and it may be noticed that first-degree fractures involve structures on one side of the joint only, whereas both sides are involved in those of the second degree. It also shows that when both bones are broken the line of fracture of the first break to occur is oblique in torsion fractures and transverse in abduction and adduction fractures.

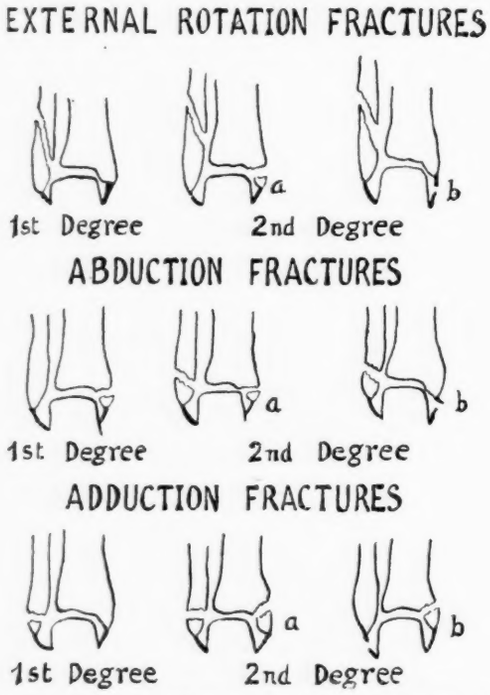


FIG. 1.—Ashurst's classification of ankle-joint fractures (after W. G. Campbell).

Minor Fractures

Campbell (1938) has recently demonstrated that first-degree ("minor") fractures can be safely treated with a local anaesthetic and that immediate weight-bearing without plaster can then be allowed. It must be remembered, however, that some first- and second-degree fractures look identical on the radiograph, though there is risk of displacement in the second group and not in the first. Obviously it would be dangerous to treat second-degree fractures without plaster, and it is important to distinguish them at once by pushing the foot laterally or medially towards whichever bone is seen on the radiograph to be fractured. This is painful only when the astragalus presses against the broken bone, which does not occur if the ligament on the opposite side of the joint is intact. There is no necessity to test the ligament when the radiograph shows that both bones are broken, because the fracture is then obviously not first-degree. The test consists in a purely lateral movement of the foot on the leg, and is vitiated if a rotatory movement is accidentally added (Roberts, 1938). The important distinction between minor and major fractures depends, therefore, first on a radiological and secondly on a clinical examination, in that order.

Treatment (Campbell, 1938).—One side of the foot only is damaged in minor fractures, and the resulting haematoma is entered by a Record needle after anaesthetizing the skin. Ten to twenty c.cm. of 2 per cent. procaine or novocain is injected; this should relieve the pain completely and allow weight-bearing within a few minutes. The patient walks without splint or plaster and attends daily for the next two or three days, but the injection is repeated only if pain recurs. Radiographs may be taken after the first two days and subsequently at intervals of a week until consolidation is seen to have occurred, when no further treatment is necessary. In the fracture clinic of the Royal Northern Hospital it has been found possible to ignore many of these fractures and to dispense even with a local anaesthetic.

Major Fractures

Both sides of the joint are damaged in this group (that is, either both bones or a bone and a ligament) and displacement has already occurred or is liable to do so. Bone injury is seen on the radiograph and a torn ligament is diagnosed by the clinical test (Roberts) described above, which is, of course, only necessary when the injury is bony on one side of the joint and ligamentous on the other. A further deformity (not shown in Fig. 1) sometimes occurs in rotation fractures when the force continues to act until the astragalus breaks off a wedge-shaped piece from the back of the tibia, and the foot may then be displaced backwards as well as outwards. A similar fragment occasionally breaks off from the front of the tibia, but this is generally due to a hyperextension mechanism, which is unusual. The fracture is called third-degree

(Ashurst) if the whole lower end of the tibia is fractured in addition to the primary deformities.

Anaesthesia.—Local anaesthesia may be used, but it is not always satisfactory even in recent cases. The skin is painted with iodine and anaesthetized and a Record needle passed into the haematoma and into the ankle-joint. Ten to twenty c.cm. of 2 per cent. procaine or novocain is injected, and the same procedure is repeated on the opposite side of the limb. A general anaesthetic is, however, usually preferable, and gas and oxygen after preliminary morphine 1/6 grain, or omnopon 1/3 to 2/3 grain with scopolamine 1/150 grain, given hypodermically, is satisfactory.

Treatment of Major Fractures

If there is damage on both sides of the joint but no displacement the limb is put in plaster without either anaesthetic or manipulation. Displacement, however, is more common, and necessitates both anaesthesia and manipulation, preferably under radiological control.

OPERATION

The patient is in the dorsal position with the affected limb hanging over the end of the table and the knee bent at a right angle to relax the tendo Achillis. The surgeon sits on a low stool at the end of the table with the patient's foot on his knee and the most recent radiographs in full view. A felt strip a quarter of an inch thick and three and a half inches wide is stitched round the upper third of the leg (Fig. 2) and the proper length for two plaster slabs is then measured with a gauze bandage or tape. The first slab will run like an elongated stirrup down each side of the leg and across the heel, and the second will pass from the middle of the felt strip round the back of the heel to the tips of the toes.

The fracture-dislocation is now reduced by taking the back of the heel in one hand and pulling the whole foot forward, while the other hand acts as a fulcrum and pushes against the front of the leg just above the ankle (Fig. 2). The lateral displacement is corrected by steady pressure inwards or outwards (depending on the type of fracture shown on the radiograph) while maintaining the forward position of the foot. Firm steady pressure is required, and there need be no fear of producing over-correction unless the internal malleolus is broken at exactly the joint level. The ankle is held in the corrected position and reduction confirmed by screening in two planes with a shock-proof portable *x*-ray set, but the foot-piece of the operating table must be removed before the antero-posterior view becomes possible.

When reduction is perfect in both planes the two plaster slabs are prepared by an assistant as follows. A six-inch plaster bandage six yards long is put in water and rolled backwards and forwards upon itself to make the lateral (stirrup) slab the required length. Only one bandage is used, and the slab is folded longitudinally upon itself and fixed to the inner and outer sides of the limb next the skin with a six-inch gauze bandage six yards long. The posterior slab is made in the same way from one plaster bandage, but its width is not halved by folding, and it is held in place by a plaster bandage (6 inches by 6 yards). Both slabs are put on very wet with three ends resting on the felt strip and the fourth hooked round the dorsal surface of the toes (Fig. 3). The margins of the posterior slab are cut by a knife for a distance of half an inch at the point where it passes round the heel, and both slabs are moulded smoothly on the limb by the surgeon, who has shifted his grip to include the plaster, but continues to hold the fracture fully reduced. The foot is held at a right angle and midway between varus and valgus, while the fingers and thumb press closely behind and below the two malleoli. The common practice of putting the foot in varus (inverted) is a mistake, and though the heel may be pressed into slight varus the forefoot should be, if anything, in valgus.

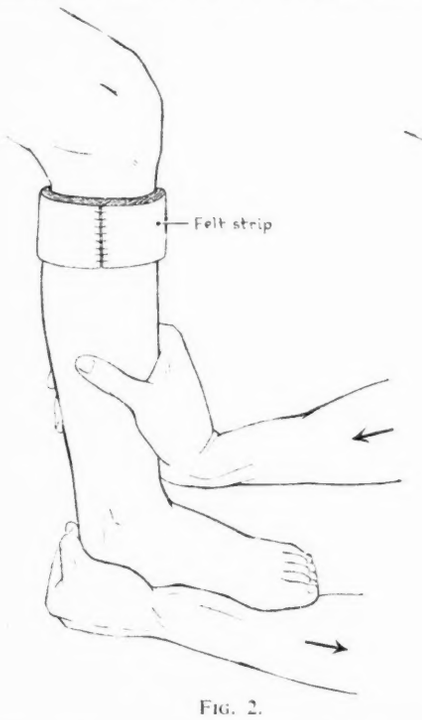


FIG. 2.

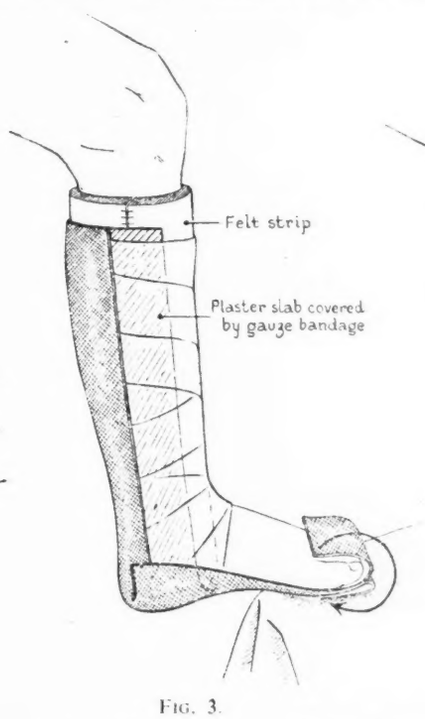


FIG. 3.

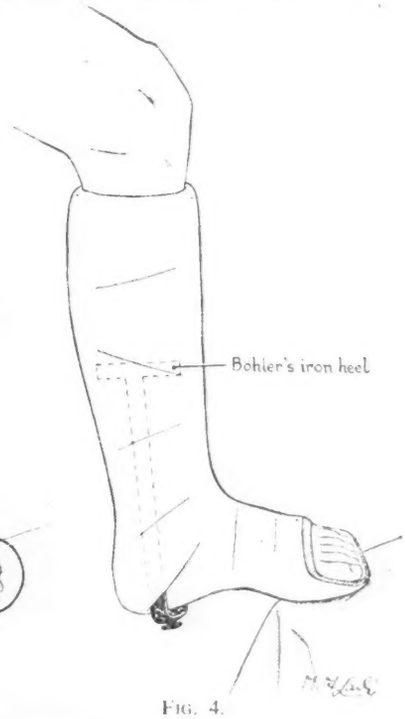


FIG. 4.

The fractured limb is now screened or radiographed in both planes, and anything short of perfect reduction necessitates removing the plaster and repeating the procedure. The plaster reaches the tips of the toes below and supports their plantar surface, but is cut away dorsally so that each toe is visible and movable (Fig. 4).

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

FRACTURES ROUND THE ANKLE-JOINT

BY

ERIC I. LLOYD, M.B., B.Ch., F.R.C.S.

Fractures round the ankle-joint are among the commonest of lower limb injuries, and their treatment is a matter of such overwhelming importance that every doctor should know as much as possible about it, so that he can either decide to treat these cases—with a full knowledge of his responsibility—or get such specialized assistance as circumstances permit. These fractures used to be treated in bed on a splint for six weeks with the minimum of reduction and the maximum of rest. Everyone now knows that a "walking plaster" is the proper thing, but the urgent necessity for obtaining and keeping exact reduction is less generally realized. There are still occasions when a patient's future is irreparably blighted by a good plaster worn for six or eight weeks on a very ill-reduced fracture. It is unfortunate that a patient in plaster can often bear weight with comfort on a fracture which is not in good position.

Classification

Pott's fracture was a term originally applied to fracture-dislocations of the ankle in which the foot was displaced outwards upon the leg. The advent of *x* rays has permitted more exact diagnosis and encouraged division of ankle-joint fractures into groups which were not recognized by Pott (1714–89). Ashurst's classification (1922) divides ankle-joint fractures, according to their method of production, into external rotation (61 per cent.), abduction (21 per cent.), and adduction (13 per cent.) fractures, the remaining 5 per cent., which include compression fractures, being atypical forms. Fig. 1 shows this diagrammatically, and it may be noticed that first-degree fractures involve structures on one side of the joint only, whereas both sides are involved in those of the second degree. It also shows that when both bones are broken the line of fracture of the first break to occur is oblique in torsion fractures and transverse in abduction and adduction fractures.

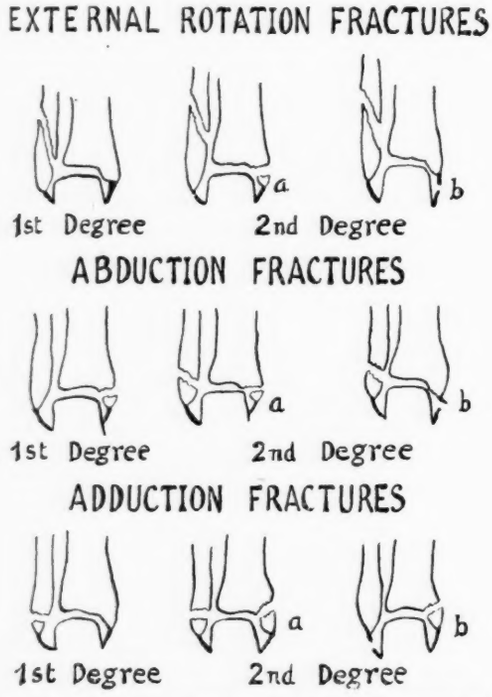


FIG. 1.—Ashurst's classification of ankle-joint fractures (after W. G. Campbell).

Minor Fractures

Campbell (1938) has recently demonstrated that first-degree ("minor") fractures can be safely treated with a local anaesthetic and that immediate weight-bearing without plaster can then be allowed. It must be remembered, however, that some first- and second-degree fractures look identical on the radiograph, though there is risk of displacement in the second group and not in the first. Obviously it would be dangerous to treat second-degree fractures without plaster, and it is important to distinguish them at once by pushing the foot laterally or medially towards whichever bone is seen on the radiograph to be fractured. This is painful only when the astragalus presses against the broken bone, which does not occur if the ligament on the opposite side of the joint is intact. There is no necessity to test the ligament when the radiograph shows that both bones are broken, because the fracture is then obviously not first-degree. The test consists in a purely lateral movement of the foot on the leg, and is vitiated if a rotatory movement is accidentally added (Roberts, 1938). The important distinction between minor and major fractures depends, therefore, first on a radiological and secondly on a clinical examination, in that order.

Treatment (Campbell, 1938).—One side of the foot only is damaged in minor fractures, and the resulting haematoma is entered by a Record needle after anaesthetizing the skin. Ten to twenty c.cm. of 2 per cent. procaine or novocain is injected; this should relieve the pain completely and allow weight-bearing within a few minutes. The patient walks without splint or plaster and attends daily for the next two or three days, but the injection is repeated only if pain recurs. Radiographs may be taken after the first two days and subsequently at intervals of a week until consolidation is seen to have occurred, when no further treatment is necessary. In the fracture clinic of the Royal Northern Hospital it has been found possible to ignore many of these fractures and to dispense even with a local anaesthetic.

Major Fractures

Both sides of the joint are damaged in this group (that is, either both bones or a bone and a ligament) and displacement has already occurred or is liable to do so. Bone injury is seen on the radiograph and a torn ligament is diagnosed by the clinical test (Roberts) described above, which is, of course, only necessary when the injury is bony on one side of the joint and ligamentous on the other. A further deformity (not shown in Fig. 1) sometimes occurs in rotation fractures when the force continues to act until the astragalus breaks off a wedge-shaped piece from the back of the tibia, and the foot may then be displaced backwards as well as outwards. A similar fragment occasionally breaks off from the front of the tibia, but this is generally due to a hyperextension mechanism, which is unusual. The fracture is called third-degree

(Ashurst) if the whole lower end of the tibia is fractured in addition to the primary deformities.

Anaesthesia.—Local anaesthesia may be used, but it is not always satisfactory even in recent cases. The skin is painted with iodine and anaesthetized and a Record needle passed into the haematoma and into the ankle-joint. Ten to twenty c.cm. of 2 per cent. procaine or novocain is injected, and the same procedure is repeated on the opposite side of the limb. A general anaesthetic is, however, usually preferable, and gas and oxygen after preliminary morphine 1/6 grain, or omnopon 1/3 to 2/3 grain with scopolamine 1/150 grain, given hypodermically, is satisfactory.

Treatment of Major Fractures

If there is damage on both sides of the joint but no displacement the limb is put in plaster without either anaesthetic or manipulation. Displacement, however, is more common, and necessitates both anaesthesia and manipulation, preferably under radiological control.

OPERATION

The patient is in the dorsal position with the affected limb hanging over the end of the table and the knee bent at a right angle to relax the tendo Achillis. The surgeon sits on a low stool at the end of the table with the patient's foot on his knee and the most recent radiographs in full view. A felt strip a quarter of an inch thick and three and a half inches wide is stitched round the upper third of the leg (Fig. 2) and the proper length for two plaster slabs is then measured with a gauze bandage or tape. The first slab will run like an elongated stirrup down each side of the leg and across the heel, and the second will pass from the middle of the felt strip round the back of the heel to the tips of the toes.

The fracture-dislocation is now reduced by taking the back of the heel in one hand and pulling the whole foot forward, while the other hand acts as a fulcrum and pushes against the front of the leg just above the ankle (Fig. 2). The lateral displacement is corrected by steady pressure inwards or outwards (depending on the type of fracture shown on the radiograph) while maintaining the forward position of the foot. Firm steady pressure is required, and there need be no fear of producing over-correction unless the internal malleolus is broken at exactly the joint level. The ankle is held in the corrected position and reduction confirmed by screening in two planes with a shock-proof portable *x*-ray set, but the foot-piece of the operating table must be removed before the antero-posterior view becomes possible.

When reduction is perfect in both planes the two plaster slabs are prepared by an assistant as follows. A six-inch plaster bandage six yards long is put in water and rolled backwards and forwards upon itself to make the lateral (stirrup) slab the required length. Only one bandage is used, and the slab is folded longitudinally upon itself and fixed to the inner and outer sides of the limb next the skin with a six-inch gauze bandage six yards long. The posterior slab is made in the same way from one plaster bandage, but its width is not halved by folding, and it is held in place by a plaster bandage (6 inches by 6 yards). Both slabs are put on very wet with three ends resting on the felt strip and the fourth hooked round the dorsal surface of the toes (Fig. 3). The margins of the posterior slab are cut by a knife for a distance of half an inch at the point where it passes round the heel, and both slabs are moulded smoothly on the limb by the surgeon, who has shifted his grip to include the plaster, but continues to hold the fracture fully reduced. The foot is held at a right angle and midway between varus and valgus, while the fingers and thumb press closely behind and below the two malleoli. The common practice of putting the foot in varus (inverted) is a mistake, and though the heel may be pressed into slight varus the forefoot should be, if anything, in valgus.

The fractured limb is now screened or radiographed in both planes, and anything short of perfect reduction necessitates removing the plaster and repeating the procedure. The plaster reaches the tips of the toes below and supports their plantar surface, but is cut away dorsally so that each toe is visible and movable (Fig. 4).

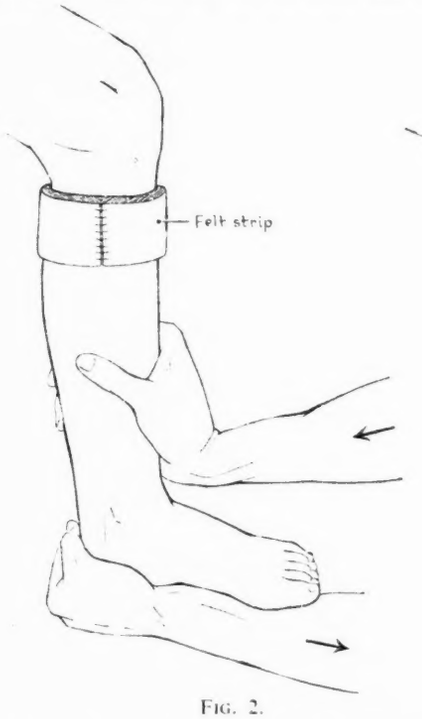


FIG. 2.

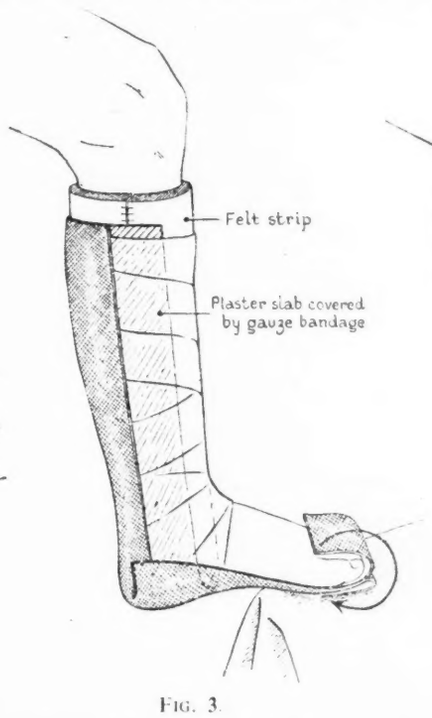


FIG. 3.

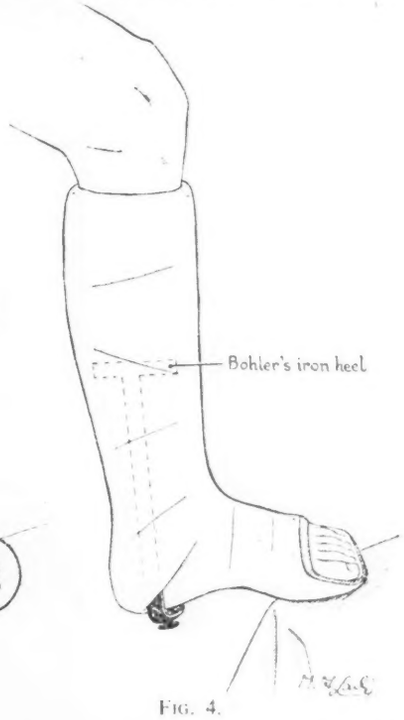


FIG. 4.

AFTER-TREATMENT

The patient is returned to bed with his plastered limb on a soft pillow and the knee slightly flexed under a cradle, which supports the bedclothes. A rubber heel is applied to the plaster next day with an elastoplast bandage, and the patient is encouraged to bear weight on the injured limb with the help of crutches or sticks, which he discards in a day or two. Böhler's iron heel is very good, but it has to be applied with a plaster bandage and interferes considerably with subsequent radiographs. On the other hand, a rubber heel necessitates the wearing of a felt or leather boot in any but the driest weather, as it soaks up moisture and then has to be changed. Rubber sponges can be bought for sixpence, and these cut in half transversely make excellent heels.

Walking is encouraged from the first, and the distance covered should be increased daily from a hundred yards to several miles. It is usually best to split the distance into three short walks rather than to take one long one, and to elevate the limb on a couch or stool during part of the intervals. Some swelling of the foot is common, and is perhaps useful in diminishing the risk of redisplacement. Circulatory troubles are rare in these fractures, but cyanosis or pallor of the toes must be treated by elevation of the limb or splitting the plaster. Pain is generally present for the first day or two and is disregarded if circulation and sensation remain normal, but the plaster must be split or removed and subsequently reapplied if pain persists or recurs. Bivalving the plaster is not advisable.

Usually a patient is able to walk unaided in a few days and can even resume his occupation during the period of fixation, which should last for a minimum of six weeks and be continued for ten or twelve weeks in severe fractures or in old patients. Radiographs are taken at fortnightly intervals until the plaster is removed. It is then replaced by a four-inch elastoplast bandage, which extends from the base of the toes to the tibial tuberosity and which is worn for three weeks. All bandaging may be then discontinued unless oedema persists, when another elastoplast bandage should be worn for three weeks. Movements of the ankle are encouraged as soon as the plaster-of-Paris has been removed, but no other treatment is necessary, and no good purpose is served by wedging the shoe or by the use of an outside short iron. The patient's desire for massage must be diverted to simple rehabilitation exercises (rowing and bicycling) which he has to perform himself.

Excellent results may be expected from this treatment, and most of the patients should ultimately regain painless movement of approximately normal range. The average period of disability after Pott's fracture in adults was reported to be forty-seven weeks when treatment was not given by an organized fracture clinic and eleven weeks when it was (B.M.A. Report, 1935). These figures probably do considerably less than justice to the first group, but there is now no doubt that segregation of fractures cuts the disability period to a minimum and almost abolishes what was previously a high rate of permanent incapacity after Pott's fracture. Good results are, however, less frequent when treatment has been delayed, when fixation has been insufficiently prolonged, or when the patient is old. Anything short of perfect reduction will of course militate against a good result, however careful the subsequent treatment.

Difficult Recent Fractures

Open operation is nowadays hardly ever necessary, though it is occasionally justifiable when a fractured internal malleolus can be seen on the radiograph to have rotated through 90 degrees. In such cases Böhler (1935) advises that the surgeon should be content to expose the fragment and replace it in position without any metallic fixation, though he doubts the necessity for doing even this in all cases. There are, however, some fractures which cannot be reduced by the above methods but which can be successfully treated by skeletal traction. This may be applied in one of two ways:

(*a*) *Gradual*, by inserting a Steinmann's nail through the os calcis and applying traction of from 10 to 30 lb. by means of a Böhler stirrup with the limb on a Braun splint. This method may take several days to accomplish its purpose, after which the weight should be gradually diminished and the limb left on the splint for a week or ten days and plaster then applied round the nail, which is removed in a few days if the radiograph still shows good position of the fragments.

(*b*) *Immediate*.—A Steinmann's nail is inserted through the os calcis and the limb extended on a Böhler screw-traction apparatus. Reduction is assisted by the hands, and the malleoli are compressed with an os calcis redresseur or Thomas wrench if necessary. The fracture is screened while the limb is still on the screw-traction apparatus and before applying plaster-of-Paris. The nail is removed when the position is seen to be satisfactory, and walking begins on a rubber heel as already described.

Old or Neglected Fractures

These offer considerable difficulty, and it is often hard to know whether to attempt reconstruction of a fracture or to arthrodese the ankle-joint at once. It is sometimes worth attempting correction up to about six months after the original accident in young patients, though this may entail an open osteotomy of the fibula. The osteotomy is performed in the line of the old fracture; the wound is sutured and the limb placed on a screw-traction apparatus with a Steinmann's nail through the os calcis as already described. Traction is applied and a redresseur (Böhler) compresses the malleoli. Position is checked by the *x*-ray screen and plaster is applied with the limb still on the traction apparatus. Subsequent procedure is the same as that described above.

Long-standing deformities which cause much pain are best treated by arthrodesis of the ankle. The joint surfaces have then been too much damaged by traumatic osteo-arthritis for a good result to be expected from reconstituting the fracture, and "there is no doubt that a well-arthrodesed ankle is infinitely superior to one in which a moderate result has been obtained by means of a reconstruction operation" (Ollerenshaw, 1929).

REFERENCES

Ashurst, A. P. C., and Bromer, R. S. (1922). *Arch. Surg.*, Chicago, **4**, 51.
B.M.A. Report of Committee on Fractures, 1935, London.
Böhler, L. (1935). *Treatment of Fractures*, 4th English ed., p. 448, Bristol.
Campbell, W. G. (1938). *Lancet*, **2**, 872.
Ollerenshaw, R. (1929). *British Medical Journal*, **1**, 585.
Roberts, N. (1938). Quoted by Campbell, loc. cit.

Chronic Rheumatism.—The signs and symptoms of various forms of arthritis of the hip-joint and sciatica are discussed. Important points in treatment are said to be: (1) the prevention of haemorrhages after gold therapy by control of the platelet count, which should not be allowed to fall below 150,000 per c.cm.; (2) the administration of iodides; (3) the use of vitamin B_1; and (4) intradermal injections of histamine in cases of sciatica. The indications for surgical treatment are also considered.—Chronic Rheumatism in 1938. F. Françon.—*Rev. Médecine*, May, 1939, **56**, 272.

THE CANCER CAMPAIGN

Research to Continue during the War

The annual general meeting of the British Empire Cancer Campaign was held on December 14 at the Campaign's offices in Grosvenor Crescent. Lord HAILSHAM presided, and read a letter from the Duke of Gloucester, President of the Campaign, addressed from the general headquarters of the B.E.F. His Royal Highness said that he entirely approved of the Grand Council's decision to contribute towards the national effort by placing its appeal organization and equipment at the disposal of one of the national war charities (St. Dunstan's) instead of itself conducting appeals; but at the same time it was encouraging to learn that important cancer research would continue to be carried out under the auspices of the Campaign.

"I understand" (wrote the Duke) "that those who are skilled in such research and whose services are not required at this juncture for national scientific purposes will continue to apply their efforts to the solution of the problem. The cessation of any medical research, and more especially cancer research, except in circumstances where the personnel was not available, would be deplorable. . . . In England and Wales alone the population is depleted yearly by the loss of very many thousands of lives through this dire disease, and I am told that in the continent of Europe the deaths from cancer amount to at least half a million annually. It is therefore all the more incumbent on us to use every effort to bring cancer under early and complete control."

Lord HAILSHAM said that at the meeting of the Executive Committee, sitting with the powers of Grand Council, which was to follow immediately on the annual meeting, recommendations would be brought forward from the Grants Committee that an expenditure of £35,000 be made on behalf of about twelve cancer research centres and a number of independent research workers; this was only £6,000 less than the grants made last year. Part of this research would be financed out of capital put on one side for such an emergency and the balance made up from legacies. He went on to refer to the contributions which the Allies—Great Britain, France, and Poland (the native country of Marie Curie)—had made to the cancer problem.

Professor G. GREY TURNER, in moving that the honorary officers and members of Grand Council and its standing committees be continued in office, mentioned that he had recently returned from a visit to North and South America, where, he said, the work of the Campaign and of cancer research generally was watched with the keenest interest and with the hope that it would not be eclipsed even in the present time of national preoccupation.

Lord HORDER, in moving the adoption of the annual report, said that it would be obvious from this document, which was larger than any previous issue, in how many directions research was being pursued. The Duke of Gloucester's timely remark that the cessation of research, if personnel could by any means be found, would be deplorable gave a very desirable lead. When war broke out there was an almost universal move to close down voluntary effort, however urgent it might be; but second thoughts, as was so often the case, had brought wisdom. Cancer research, after all, could be carried out to some extent by those who were, from age or other disability, precluded from making a more immediate contribution to the service of the country.

Sir ALFRED WEBB-JOHNSON, in seconding, hoped that it would be made widely known that research was continuing to be helped by the Campaign. Thanks to the careful husbanding of the finances, it was possible to carry on to some extent even without fresh appeals.

Sixteenth Annual Report

The annual report of the Campaign, edited by Mr. J. P. Lockhart-Mummery, is a weighty document embodying separate reports from not far short of fifty laboratories, research departments, oversea branches, and individual research workers. This heterogeneous collection of information of unequal value has been reduced to an ordered narrative by the editor in his twenty-page summary in which he reviews the work which is proceeding, especially in the biological and physical fields. One slight point of criticism was voiced by Professor Grey Turner at the annual meeting—namely, that little or nothing was said concerning the surgical aspects of the problem. The editor writes of the new spirit of hopefulness which now animates cancer research. "Students seem to feel that a point has been reached at which ignorance may be transmuted, almost any day, into clear understanding."

He discusses the work now proceeding in many laboratories on cancer-producing agents such as some of the tars, which suggests that they exert their effects in conjunction with other agents. "Such assumptions as the doctrine that 'irritation' of itself is a cause of cancer have been discounted in favour of precise knowledge about the agents which do in fact cause the disease. The way has thus been opened to intensive study of particular as opposed to general problems. New facts, too, have emerged—for example, that a relationship exists between the quality of inhibiting growth and the quality of causing cancer. It is being asked, in consequence of this observation, if cancer may not represent an adaptation of the cell to circumstances in which normal activity has become difficult."

The experimental work on the biological effect of neutrons is yielding interesting information. The effects are similar to those produced by *x* rays and gamma rays, but there are some quantitative differences. As to the high-voltage *x*-ray plant in the cancer research department of St. Bartholomew's, this is now working satisfactorily at one million volts. The first treatment at this voltage was given towards the end of February. Not only is steady operation at 1,000 kV completely assured, but a kilovoltage of 1,200 is within the bounds of possibility. Over fifty patients have now been treated at 700 kV. "It is already certain" (says the department) "that an inoperable carcinoma of the rectum can be made to disappear; this satisfactory result has occurred in four out of eight cases treated."

Distribution of Cancer in England and Wales

The report contains the third and concluding instalment of a study by Dr. Percy Stocks of the distribution of cancer of various organs in the population of England and Wales. The standardized mortality ratios for separate counties and towns have been worked out, and in this instalment nine maps are given showing the distribution of mortality during the decade 1921–30 amongst females from cancer of various sites.

The general distribution of highest mortality is in North Wales, a small area south of the Wash, and the East Riding. For almost all the sites examined the urban rates are in excess of the rural, even after a correction has been made for the fact that many cancer patients resident in country districts die in town hospitals. In North Wales the high cancer mortality rate is entirely accounted for by an enormous excess of stomach cancer affecting both sexes. Some areas of the North of England with an adverse social environment, of which Durham County is an example, also show a large excess of gastric cancer, but here it is usually accompanied by a parallel excess of uterine and skin cancer and a pronounced deficiency of ovarian, breast, rectal, prostatic, and bladder cancer which is not seen in North Wales. Gastric cancer has a low incidence in the south-eastern counties, in Norfolk, and in most of the agricultural areas of the South and Midlands.

Dr. Stocks compares the cancer problem to a jig-saw puzzle in which many kinds of specialists are at work, with the danger that increasing specialization may result only in forming unconnected islands of the complete picture. It is the medical statistician's job to search for bridges between the islands.

VALUE OF CANNED FOODS

Canned foods were a war-time invention, 130 years ago, for the feeding of the troops during the Napoleonic campaign, so that the subject of Sir William Savage's Chadwick Lecture on December 12, the health aspects of canned foods, had a topical interest. He reminded his audience of the magnitude of the canned food industry to-day. Over 350 different canned commodities are on the market. Of the canned food eaten in this country between 85 and 90 per cent. is imported, so that such an industry requires two kinds of supervision—one in the country where the canning is done, and the other in the country where the food is consumed. Canning requires a high degree of knowledge and scientific attention to detail, and Sir William Savage said that he had studied canning conditions in the United States and Canada and had been impressed by the careful control which was exercised and the excellence of the food used. As for the examination of the product after arrival in this country, it was, if anything, over-thorough, but, of course, the reputation of canned food must vie with that of Caesar's wife.

Possible Risks to Health

Possible health risks were discussed by Sir William Savage under three heads: nutritional changes during manufacture, danger of chemical additions from the container, and bacterial infections or poisoning. Quantitatively the process of canning caused no detrimental changes; indeed, the advantage was with the canned food because everything in the tin was edible. Qualitatively there were possible changes in vitamin content. There was no loss in respect of vitamins A and D, and so far as vitamins B_1 and B_2 were concerned, while there was some loss, it was not greater than resulted when similar foods were cooked. It was with cooked food, not with raw, that canned products should be compared. Vitamin C also underwent some loss, but by modern canning methods much of this vitamin was retained, and here again the loss was comparable to that which occurred on cooking. In America canned tomatoes were even used as a source of vitamin C for infants. As for chemical contamination, in former days there was a possibility of this from solder, but solder was now very little used, and there was no evidence that either tin or lead was a health hazard with canned foods. For thirty years, Sir William Savage said, he had been looking for cases of tin poisoning arising in this manner, and had only discovered one doubtful instance. Lead poisoning was more important, being cumulative in its effect, and minute doses taken over a long time would be deleterious, but here again with modern canning there was practically no danger. Bacterial infections presented a more complicated problem. Three types of food poisoning must be considered—namely, botulism, infection with living bacteria of the food-poisoning type, and the "toxin" type of outbreak caused by the toxic products of bacteria. From 1915 to 1930 there were many outbreaks of botulism, incriminating some American canned products, but scientific investigation had led to efficient methods of prevention and the risk was now almost eliminated from commercial canned products, though it still attached to home canned. Food poisoning with living bacteria occurred with canned foods, but was comparatively rare, and the incidence was much less than with foods not canned. Outbreaks of the "toxin" type were at one time fairly frequent with canned foods, but the number had been materially diminished, especially so far as meat was concerned; canned marine products were still sometimes implicated.

A Beneficial Invention

Altogether Sir William Savage's verdict was that although canned foods did cause a certain amount of food poisoning they were safer than ordinary foods. The dangerous foods, he said, were those which were manipulated—for example, partially heated and then put out to cool, such as meat pies and made-up rissoles. He thought that a good deal of unnecessary prejudice was caused with regard to canned products because, on a case of food poisoning, the first question of the doctor was apt to be, "What canned foods have you been eating?" Scientific investigation did not justify that innuendo, and altogether the canning process, which might prove exceptionally useful during the war, was a most reliable and beneficial invention.

EXPERIMENTS ON ANIMALS IN 1938

The Home Office White Paper[1] setting out the licences granted in 1938 under the Cruelty to Animals Act, 1876, shows how carefully the authorities keep watch on the use of animals in scientific research. When an animal is used under licence alone it must be kept under anaesthesia during the whole of the experiment, and if pain is likely to continue after the effect of the anaesthetic has worn off, or if the animal has been seriously injured, it must be killed before it comes round. Various certificates are issued to allow the holder to modify the conditions of the licence. During 1938 licences were issued to 2,152 persons, and 566 of these performed no experiment. The total number of experiments performed was 958,761. Anaesthetics were given for all serious operations. Antiseptic conditions must be observed so that the wounds shall as far as possible heal without pain. If suppuration takes place the animal must be killed, but it is generally necessary for the success of these experiments that the wounds shall heal cleanly. After the wounds have healed the animals are not necessarily or even generally in pain, for important organs may be removed without causing pain after the operation. When a part of the nervous system is excised the resulting degenerative changes are painless. No cutting operation more severe than a superficial venesection was performed under Certificate A—that is, without an anaesthetic. The 908,846 experiments performed without anaesthetics mostly concerned inoculations and feeding; some were oral administrations, inhalations, external applications, and the abstraction of body fluids. Certificate A is chiefly given to allow the animal to be kept without an anaesthetic during the time required for the development of the results of a drug or injection. In many of these experiments the results are negative and no pain at all is caused. Licences were granted to forty-eight cancer investigators, who performed over 35,000 experiments, mostly without anaesthetic. The bulk of these were inoculations in mice or exposure of animals to radiations. The large majority of all the experiments were performed for municipal or Government authorities.

During the year the inspectors made over a thousand visits to registered places, mostly without notice. They found the animals suitably housed and well cared for and the licensees generally attentive to their duty. No better indication of the care taken to protect animals could be given than the report of the trivial irregularities observed by inspectors. A licensee allowed to inject fluid into nerve trunks inadvertently divided two nerves; another, entitled to give inoculations to animals at one place, gave some at another; two more licensees performed ligation of blood vessels in rabbits, an operation not covered by their certificate. These offenders were all admonished or warned.

[1] *Experiments on Living Animals.* 1939 H.M. Stationery Office, York House, Kingsway, W.C.2. (Pp. 67. 1s. net.)

Encephalography in Neuroses.—Wigert describes encephalographic findings, usually of a type indicating cerebral atrophy, in a number of apparently psychoneurotic patients, and ascribes an aetiological significance to them. He concludes that, in certain cases which we call "psychoneurotic," the essential condition is a character anomaly which is organically conditioned and which cannot be influenced by psychotherapy or other methods hitherto employed.—Encephalographic Findings in So-called Psychoneuroses (Ger.). V. Wigert.—*Acta psychiat. Kbh.*, 1938, 13, Fasc. 4, 401.

Reports of Societies

CONVALESCENT SERUM IN ACUTE RHEUMATIC FEVER

At a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on December 12, Sir WILLIAM WILLCOX presiding, Dr. C. A. GREEN communicated some preliminary observations on the use of convalescent serum in the treatment of acute rheumatic fever.

The work which Dr. Green brought forward related to a number of young male adults in a physical training establishment who had shown rheumatic manifestations. In the majority of cases a nasopharyngeal infection antedated the insidious onset of pain in one or more joints which necessitated medical attention, when the patient was found to be febrile. On the whole the joint lesions in these cases had not been very striking and rapidly improved, leaving no permanent injury. The initial pyrexia rarely lasted longer than one week, but exceptional cases continued febrile for months. The symptoms were gradually relieved by salicylates. Cardiac complications were found in certain of the cases, but fortunately a number of the patients showed no tendency to develop cardiac lesions, and as these were otherwise healthy young adults it was decided to use a serum taken from them during their convalescence after acute rheumatic fever. The serum was taken from four to eight weeks after the temperature had subsided, in the absence of any other indication of persistent infection.

The serum, which was filtered and preserved, was used for the treatment of cases of acute rheumatism presenting the classical fleeting joint pains with a marked tendency to cardiac involvement. The initial effect of serum therapy had been in most cases satisfactory in that the temperature and pulse rate rapidly returned to normal limits and the symptoms were relieved. He gave the case histories and temperature charts of fifteen patients, some of whom had been treated by serum alone, while in others this treatment had been supplemented by further measures. Of ten cases in which no salicylates or other preparations were used during the illness seven reacted favourably to convalescent serum. The injections were mostly from 10 to 50 c.cm. of serum, generally given intramuscularly, on three successive days. Out of seven cases in which the treatment was successful, six were primary attacks and one was a recurrence. Given in the early stages the serum did appear to reduce the period of pyrexia. Of the fifteen cases nine were considered to have benefited. The volume of serum available was not large enough to permit really adequate dosage in every case. Two of the patients showed a partial collapse, but both of them rapidly responded to appropriate treatment. In a few instances the serum had no effect on the course of the disease. The final estimation of the value of this mode of treatment must be deferred until all possible cardiac lesions had been assessed.

In attempting to demonstrate the mechanism by which such serum might act it was noted that the intradermal injection into the human skin of joint fluid from an active case of acute rheumatism produced an erythematous swelling. Serial specimens of serum taken during convalescence from the patient from whom the joint fluid had been obtained were mixed and incubated *in vitro* with the joint fluid. It was found that serum taken in the later stages of convalescence prevented the appearance of the erythematous reaction on intradermal injection of the mixture, whereas serum in the early stages of the illness had no such effect. The nature of this reaction was unknown, but it was possibly an example of toxin-antitoxin neutralization.

Sir WILLIAM WILLCOX said that rheumatic fever or acute rheumatism was one of the most fascinating subjects in medicine. Those of them who worked in hospitals thirty or forty years ago would remember how much more common and virulent acute rheumatism was in those days. The search for the cause of acute rheumatism had so far been in vain. Every two or three years someone discovered a fresh "cause," but all that was known was that the haemolytic streptococcus was very closely associated with the condition. It had not been demonstrated as yet whether another factor was also at work. There had been great hopes that Swift in America had discovered the associated causal factor in rheumatic fever, but at the recent conference in the United States in September last he very frankly stated that he had found that the cause of rheumatic fever was still elusive. The unpleasant symptoms—namely, fever and pain—could be controlled by salicylates, but no remedy was known which would control the development of cardiac lesions unless it was prolonged rest and the utmost care to avoid infection. He thought that Dr. Green's paper offered some hope that the cardiac complications of rheumatic fever might be prevented or minimized by the use of convalescent serum. It was interesting that in two cases anaphylaxis should have occurred, much as in the case of foreign serum, though the onset was not so rapid and the symptoms, although alarming, were not fatal.

Polycyclical Rheumatism

Dr. W. H. BRADLEY said that if a series of untreated cases of rheumatic fever were watched they would be found to fall quite naturally into two groups—a monocyclical group, which resolved quite rapidly, within perhaps a week of the onset of the disease, and continued to make progress to recovery, and a polycyclical group, which persisted for weeks and months. It was therefore very difficult without taking a large series of controls to come to any conclusion whatever about the value of serum therapy. In the polycyclical group rises and falls of temperature were quite common, and at the period of the rises the appearance of new manifestations of rheumatism was to be expected. Some work was done on human serum a few years ago by Coburn, who had noticed that as the patient recovered the anti-streptolizing titres rose to high levels, and therefore he selected human serum in which there was a high anti-streptolizing titre and used it as a therapeutic agent. But he was discouraged by the rather severe collapse-like reactions which he occasionally encountered, and therefore he did not persist. The liability of rheumatic patients to collapse, not suddenly, as was usual with anaphylaxis, but rather later, after the injection of human serum, was a phenomenon which Coburn had noticed. One little point which could be controlled in the further studies that he hoped Dr. Green would be able to make was the determination of the albumin-globulin ratio of all the serum he preserved. Certain tables which Dr. Green had shown regarding the neutralizing of a hypothetical toxic substance in joint fluid also furnished a reminder of the polycyclical nature of the disease and of the precipitin reaction which Coburn had recently described. Coburn had stated that serum taken from a rheumatic subject during the last few days before he started his rheumatic attack contained a substance which was precipitated by serum from the patient during the cycle, and that a similar precipitation reaction occurred between the serum taken from the patient during the cycle and during the interval between cycles.

Dr. H. J. PARISH asked what happened in the use of serum of normal non-rheumatic subjects. Were reactions obtained with normal serum?

Dr. GREEN replied that he agreed entirely that clinical rheumatic fever showed these monocyclical and polycyclical varieties or degrees. What he had brought forward was only a preliminary investigation and was subject to many qualifications in the light of later research. The effect of normal serum in these cases had not been tried out.

Prophylactic Vaccination against Pertussis

At the same meeting Dr. I. H. MACLEAN read a short paper on "Prophylactic Vaccination against Whooping-cough,"

Vaccination against whooping-cough in this country was started by Freeman, and the early results were encouraging, but pertussis vaccine somehow came into disrepute. It was only vaccines from very smooth strains of *B. pertussis* that were antigenic. There was only one way of controlling whooping-cough and that was by the cough-plate method of diagnosis. At least half the cases which came to his hospital as such were not pertussis at all, as established by the cough-plate method, though there was a spasmodic cough. The cough-plate had drawn attention to what might be a new disease—namely, para-pertussis. At the Annual Meeting of the British Medical Association in Aberdeen this year Sir John Ledingham had suggested that pertussis vaccine might be combined with alum-precipitated diphtheria toxoid in prophylaxis against both diphtheria and pertussis. Some experiments had been carried out at St. Mary's which had shown that vaccine precipitated by alum remained a good antigen, but it had not yet been possible to work out the best dose and the best conditions.

Dr. Maclean gave particulars of the courses of immunization which had been followed at St. Mary's:

	Clinic Cases	Exposures		Clinic Cases	Exposures
1936	64	5	1938	119	8
1937	153	22	1939	140	10

To this series had to be added forty-six cases from other sources with forty-six exposures, and in the whole series there had not been one known failure. This was subject to the qualification that owing to dispersal following the war the clinic had been closed and it had not been possible to keep track of cases. The statistics did not refer to cases vaccinated during the contact period. Immunization during the incubation period was not often successful. At most 25 per cent. of the cases did not develop whooping-cough in that they did not have severe cough and vomiting, but nearly all of them would give a positive cough-plate. Possibly in another 30 to 50 per cent. the disease could be modified, but in the remainder there was no success at all. There was a stage when immunization during the contact period might do no good, and sometimes he had a suspicion that it might do a little harm. His cases included only those which had been immunized at least one month before being exposed to the disease.

His practice was to give three or four doses of 4,000 million of the vaccine at weekly or bi-weekly intervals, and then a stimulating dose of 4,000 million one month later, using the secondary response to push immunity up to its maximum. The total dose was thus from 16,000 to 20,000 million. He suggested that adequate prophylaxis could be obtained by smaller doses than the very large ones sometimes recommended.

Professor ALEXANDER FLEMING said that the prophylaxis of whooping-cough by vaccination was a therapeutic measure of first-class importance, comparable with typhoid vaccine, and far more valuable indeed for the reason that in this country whooping-cough was a widespread disease, whereas typhoid was not.

Dr. YOUNG asked whether para-pertussis was a separate disease and whether the vaccine of pertussis could protect against it.

In reply to this and other questions Dr. MACLEAN said that from some work he had done he was led to believe that an attack of para-pertussis would not protect against pertussis. A few strains of para-pertussis were now put in pertussis vaccine, but it was not yet decided how important it was nor what percentage of the vaccine should be made from para-pertussis. At the moment the provisional figure was 10 per cent. The immunity conferred was supposed to be lifelong, but now and then there were reports of recurrent attacks. As to the best age for vaccination, it was well to choose a time when the child was completely healthy, free from even a slight infection, and the best age was towards the end of the first year. Severe reactions were sometimes encountered, especially when dealing with under-nourished children and children who might be suffering from bronchitis or some minor ailment.

DISCIPLINE AND LEADERSHIP

The various "men of destiny" who, without any of the traditional prestige of the old emperors and kings, have imposed upon Europe a despotism greater than theirs make a rich theme for the psychologist, of which Dr. H. CRICHTON-MILLER took advantage in his address to the Medical Society of Individual Psychology on December 14.

Dr. Crichton-Miller, whose subject was "Discipline and Leadership," said that the first business of a dictator was to foster and exploit the suggestibility of his people. To ensure undiscriminating acceptance of dictatorship instinctual passions had to be maintained at a dynamic level and rational discrimination discouraged. Thus the national life in many countries was becoming increasingly antagonistic to the individual point of view, and as the standard of self-discipline fell that of coercive social discipline was raised. In democratic countries leadership was usually based on prestige or tradition, such as that of the hereditary monarch. Again, the history of the British Empire was full of such examples of leadership as that of Brooke of Sarawak, whose prestige was largely based on his English origin. Then there was the leadership accorded to physical superiority; men had always been ready to recognize the leadership value of physical qualities of a high standard. Another aspect of leadership was suggested by the recent installation of the Dalai Lama of Tibet, where the whole tradition and ceremony revealed the necessity for prestige deriving from magical sources for the primitive mind. Age was another source of prestige, though this was the subject of contradictory opinions, and Downing Street and the Oxford Union might not think alike. The French nation was interesting as a study in the psychology of leadership; the French were realists, less influenced by magic or romance than other peoples, and chose or displaced one leader after another as he pleased or failed to please the electorate—the opposite mechanism of prestige from that attaching to heredity or caste. There were also leaders, of whom Gandhi was a conspicuous example, who attained and kept their positions on purely psychological grounds. As for the mob leader, he was likely to gain control simply by the loudness of his voice and the dramatic quality of his manner. The mob would follow anyone who satisfied an uncritical demand for a leader who appeared to know what to do in an emergency.

From all this Dr. Crichton-Miller concluded that there was no real identity between the qualities which brought about the acceptance of a leader and those which made for good leadership. The best leaders would be chosen only by a group which was capable of rational discrimination, while any group which was stirred by overwhelming emotion, especially if it comprised a proportion of persons of low intelligence, would accept a leader at his own valuation. Dr. Crichton-Miller developed this point later in reply to a discussion when he said that he had come to feel that the ability to recognize a good leader was something intuitive and not really a development of our educational system. As things stood the political charlatan had a better chance of gaining leadership in many so-called educated groups than among simple folk who were more intuitive. As for the functions of a leader, the first was vision, without which the people perished—a protective vision for the fear-ridden group, an aggressive vision for the resentful, an emancipating vision for the downtrodden. He should be able to persuade the intelligent and open-minded of the wisdom of his ideals, but this was not enough for the unintelligent or those under powerful emotion. As an ideal leader he mentioned Abraham Lincoln, who used the strength of the North to give the slaves their freedom. No doubt in simple communities, such as the Eskimos or South Sea islanders, leadership was rarely called for; only as competition sharpened had social discipline to be called in to maintain justice. Later came the phase, in which we were at present, of education and rational control, with social justice based not only upon instinctual satisfactions but upon self-discipline. Beyond this was Utopia, in which self-discipline alone was enough to maintain social justice in spite of instinctual and narcissistic frustrations.

Local News

ENGLAND AND WALES

The King's Fund

At the meeting of the Council of King Edward's Hospital Fund for London held on December 19 H.R.H. the Duke of Kent read a message from His Majesty the King, who said:

"New methods for the prevention and cure of disease entail ever-increasing expenditure. Co-ordination and co-operation must constantly be sought, and in this connexion I am sure that the Council will feel that no greater tribute could well be paid to the work which the King's Fund has tried to do than the recent splendid gift of Lord Nuffield to form a nucleus of a fund for hospitals outside the London area." The Duke of Kent in his presidential speech said that the King's Fund would this year distribute £304,000. Of this sum £43,500 had been paid in special emergency grants and an extraordinary grant of £15,000 had been made to the Westminster Hospital and a further one of £15,000 towards the building of a new hospital on the amalgamation of the Central London and Golden Square Throat, Nose and Ear Hospitals. In view of the special circumstances this year, a further distribution would be made when the hospital accounts for 1939 become available. In talking of the needs of the hospitals the Duke said: "The Government is responsible only for the cost of the beds reserved for casualties. But for the civil work, which has never stopped and is now increasing, the hospitals are dependent on voluntary contributions, and the need is all the more urgent because so many of their supporters are themselves hard hit by the war." Sir Harold Wernher, in presenting the report of the Emergency Bed Service, said that since it opened in June, 1938, 10,000 cases had been admitted to hospital through this agency. Though the Service had been closed on the outbreak of war as the staff had been seconded to the Ministry of Health for work in connexion with the casualty scheme, it had been possible to reopen it by the middle of September, and it was now in full operation and handling a steady flow of cases.

A Maternity Home for Officers' Wives

Not the least among the very deserving projects to which we are asked to give our help at this time is that of a maternity home for the wives of officers. Many officers' wives in war time are unable to meet the ordinary fees of a maternity home, and they have usually no claim upon the military maternity homes. A real need thus exists, but thanks to the generosity of Mrs. Edward Baron, who has lent Fulmer Chase, near Slough, rent and rates free for the duration of the war, the first steps have been taken to supply this need. Fulmer Chase, which stands in 230 acres of country, is being adapted to accommodate twenty-eight beds, an isolation ward with a further two beds, a labour ward, lunch and dining room, and staff quarters. There will be two resident medical officers having special experience in obstetrics, and a consultant staff, drawn from the London hospital staffs in that sector, will visit the home when required. The fee for the majority of beds will be 15 guineas for three weeks, and this will be inclusive of all medical and surgical attendances, nursing, and maintenance. There will also be provision for grants in aid of special cases. It is hoped to open Fulmer Chase for the reception of patients about January 15. Promises of sums sufficient to endow two beds for the duration have been received, but funds are urgently needed if the work of the home is to be a success. The council responsible for carrying out this project includes Sir Comyns Berkeley, Dame Louise McIlroy, Professor W. Fletcher Shaw, and Dr. Frances Huxley, and donations should be sent to Sir Comyns Berkeley, who is the honorary treasurer. Further information and forms of application for admission, etc., can be obtained from the honorary secretary, Miss L. M. Brooks, Maternity Hospital for the Wives of Officers, 60, Portland Place, W.1.

Retirements from L.C.C. Service

Dr. J. A. H. Brincker, principal medical officer in the public health department of the London County Council, is retiring at the end of the year under the age limit. The Emergency Committee of the Council, after describing Dr. Brincker's work in a full-time capacity since 1911, and in a part-time capacity for several years before that, says that his knowledge has proved invaluable and "by his retirement the Council will lose the services of one of those rare experts whom it will be difficult to replace." Dr. W. K. Knobel, a senior medical officer, is also retiring under the age limit after eighteen years in the Council's service. To him the successful development of the tuberculosis scheme in its early days was in no small measure due, and the Committee says that by his retirement the Council lose the services of an able and experienced officer.

Memorial to Dr. Mabel Campbell

By her manifold interests and her vivid, generous, and courageous personality Dr. Mabel Campbell won a unique place in the life of the North of England. She was deeply and universally beloved. There is a general desire among her many colleagues, patients, and friends to perpetuate her memory in a manner expressive of her spirit. A committee representative of her various activities has been formed to institute a memorial fund, which will be applied to some beneficent purpose in keeping with Dr. Campbell's life of service. The chairman of the committee is Professor R. B. Green, Dean of Medicine, the Medical School, King's College, Newcastle-on-Tyne, and the secretaries are Mrs. George Hall and Miss Veronica Nisbet. Anyone who wishes to contribute should send a donation to the treasurer, Dr. Freda Herbert, the Medical School, King's College, Newcastle-on-Tyne.

FRANCE

[FROM OUR CORRESPONDENT]

Settlement of Doctors' Disputes by a "Conseil de Famille"

The French doctors' *Conseil de Famille* is an informal gathering of medical men before whom disputes between doctors can be brought with a view to a fair and peaceful settlement. The washing of dirty linen in public and the cost of formal litigation are avoided, and the chances of a satisfactory settlement are enhanced by the *esprit de corps* which reigns at these friendly and conciliatory tribunals. To give a fair example of the type of case brought before the *Conseil de Famille* reference may be made to a dispute ventilated anonymously in *Concours Médical* for August 27. A village was served by two doctors and a chemist, whose partiality for one of the doctors would seem to have been offensively demonstrative. One evening a patient with a fracture of the clavicle was given a prescription by the doctor in attendance. When the prescription was taken to the chemist's house the maid said that her master was not at home; she added in the presence of four witnesses that if the prescription had been written by the other doctor the chemist might have been at home. Dr. Paul Boudin, legal adviser to *Concours Médical*, is of opinion that a chemist is as much within his rights in refusing to serve a potential customer as any other tradesman, with this reservation, that the practice of pharmacy being in a certain sense a monopoly the pharmacist must have some reason for his refusal more valid than a personal animosity. Were such a case to be brought before a court of law the odds are that the maid would deny that she uttered the words reported by the witnesses, and the only result to be prophesied with certainty would be a further lowering of the prestige of the medical profession. Hence Dr. Boudin's advice to the offended doctor to appeal to the local medical society, which would consult with the local pharmaceutical society in order that a *conseil de famille* composed of members of both societies could arbitrate.

Diphtheria Inoculation

At a recent meeting of the French Academy of Medicine a resolution was adopted in favour of enforcing the new law concerning compulsory inoculation against diphtheria. The need for this reform has become pressing on account of mass migrations from France's eastern frontier and Paris to other parts of the country. According to this law the prefect of a commune threatened by an outbreak of diphtheria shall be entitled to prescribe compulsory anti-diphtheria inoculation for all children from the ages of 1 to 14 years. Only an injection *de rappel* of anatoxin would be necessary for those children certified by a doctor as having already been inoculated with anatoxin against diphtheria.

War Items

French medical students who have attained a certain level in the medical curriculum and who have been called to the colours before passing their clinical examinations are to be exempted from them on fulfilling certain conditions. The dossier of every medical student will, however, be scrutinized before such exemption is given.

It is announced that a group of Belgian surgeons are organizing an ambulance service with beds for 100 to 150 surgical cases. This service, fitted out on modern lines, will be called "Ambulance Antoine Depage" in memory of the Belgian surgeon who played so important a part in the last war.

Correspondence

Treatment of War Fractures by the Closed Method

SIR,—In several of your recent issues Dr. Trueta and his supporters, who advocate closed plasters for compound fractures, and his opponents, who fear the risk of encouraging anaerobic infection, have all omitted to mention a very simple modification of technique which enables one to have the best of both worlds.

The method referred to is the use of a plaster slab round two-thirds of the circumference of the limb, attached by a circular bandage of wet book-muslin which completes the remaining third of the tube. If the occurrence of rising temperature, excessive smell, or local discomfort makes the surgeon anxious to inspect the wound, all he has to do is to cut across part of the muslin bandage, anchoring the loose ends with adhesive strapping. If he finds no indication for removing the whole plaster, integrity can be restored by the addition of a new wet bandage. The book-muslin, from which most hospitals manufacture their plaster bandages, contains some starch, and when applied wet it absorbs some of the plaster over which it passes, so that it has none of the tendency to slide which is so troublesome with dry bandages on plaster; also, it is discouraging to the patient's fingers, unless he is quite determined to interfere, but such patients will manage to disintegrate the stoutest plaster.

The method was introduced to me during the last war by Dr. Danforth of Providence, U.S.A., but has long been popular with French surgeons and is used with modifications by Dr. Böhler in Vienna. I have used it ever since, particularly for cases of Dunn's tarsal arthrodesis, which are really compound fractures of special difficulty and in some congenital cases are subject to tiresome blisters, which heal much more quickly when dried by exposure to air.

When it is desirable to expose the wound to more rapid evaporation than can occur through the plaster, I find the best method of protection from dust, etc., is to cover the opening in the plaster loosely with a little box cut from "windowlite" and bound into shape with adhesive strapping. This substance allows ultra-violet light to penetrate to the wound; it is easily cut with ordinary scissors; it is less likely to tear the nurse's hand than wire netting; and it can be washed with antiseptics, so that it lasts for weeks, not needing any gauze or only a strip at the edges. Thus, though it is not cheap to buy, it works out much more economically than the old-fashioned repetition of gauze dressings.—I am, etc.,

Bath, Dec. 17. M. FORRESTER-BROWN, M.D., M.S.

Sterilization and Storage of Dressings

SIR,—In a C.C.S. or base hospital an ample supply of small-sized dressing packages is of great advantage. It is inconvenient to have to search haphazard at a bedside for different materials within assorted bundles. Furthermore, the supply of sterile drums and of towels may be very restricted. For both sterilization and storage of small dressings cigarette canisters have proved very useful. The ration tins of the familiar brands are procurable in unlimited numbers, and may be used again and again.

The tin is converted into a miniature "drum" by piercing about a dozen fine holes in the lid (from without inwards) to provide entry for steam and subsequent vacuum drying. A tin can be packed with at least six large swabs, a few pledgets of wool, and on top a dressing towel twelve inches square. The loaded tins are packed in a large drum (it will take forty or more), and sterilization is carried out in the main appliance. As soon as is convenient each tin is removed from the main drum under aseptic conditions (the sister or medical officer should wear gloves and gown), and the lid and upper half-inch of each tin is dipped into paraffin wax which has been allowed to cool from 160° C. to 75° C. A completely effective and lasting sealing of the perforations and lid margins results.

In practice it has been found that these dressing preparations may be stored for long periods, and that the wax sealing is not injured by rough handling. In the wards and for minor operations their compactness has proved handy and economical. Sterility of the dressings is assured.—I am, etc.,

BRUCE M. DICK,
Major R.A.M.C.; Surgical Specialist,
Nov. 28. No. 10 General Hospital.

Stored Blood for Transfusion

SIR,—I am very glad that Dr. A. C. Kanaar (*Journal*, December 16, p. 1206) has so temperately discussed ways of deciding the value of stored blood.

If we suppose for the sake of argument that stored chilled blood has about the same value as an equal quantity of blood serum dyed with congo-red, and that it can improve the colour and pulse of a patient to the same degree, we can see at once what a disastrous thing it would be to allow our present organization for the supply of stored blood to supplant one for the supply of warm fresh blood after an air raid. A recent paper by O'Shaughnessy and others justifies one in presuming that stored blood may be better than dyed serum, since they have shown that a solution of haemoglobin can sustain life, though for a limited period. My small clinical experience of using stored blood has left me anxious and uneasy, and I confess I have reverted to the use of fresh blood when the patient is ill. I should receive the greatest help from such an experiment as the following, but I have no facilities for carrying it out.

Establish what is a constantly fatal blood loss for a suitable given animal.

Compare the effects of transfusion of serum, of chilled stored blood, and of fresh blood on groups of such animals previously bled to the fatal point.

If this experiment has already been done I should be grateful for the reference.

I am inclined to the opinion that we could establish an organization for the early supply of large quantities of fresh blood, which would be practically as good as the present chilled blood supply organization so far as British towns are concerned.—I am, etc.,

Birmingham, Dec. 19. HUGH DONOVAN.

Gas Injuries to the Eye

SIR,—With regard to the treatment of gas injuries to the eye, may I suggest the following routine treatment. The contaminated eye should be flushed with liquid paraffin, which should be instilled in a continuous or intermittent current, the overflow being absorbed with cotton-wool so as not to contaminate the adjoining skin. As mustard gas readily dissolves in liquid paraffin it will wash away all the poison from the conjunctival sac. A drop of cod-liver oil or, better still, cod-liver oil irradiated with ultra-violet rays, possessing an even higher bactericidal power (see *Lancet*, 1939, **2**, 1023), should be instilled every hour into the eye for twelve hours.

I am confident that this method would better justify "the hope of mitigating the damage to the eye" than flushing it with plain water (which dissolves mustard gas less than 1 in 100) as indicated in the official handbook.—I am, etc.,

Edinburgh, Dec. 15. M. LICHTENSTEIN.

Tuberculosis in the Last War

SIR,—In your leading article in the *Journal* of December 16 (p. 1191) upon public health in war time the view is expressed that "on balance it would almost seem that a state of war—apart from its hideous toll of young male life—may have a hygienic value for a community." Among statistics adduced in support of this astonishing statement are those for tuberculosis from 1913 to 1919. "Tuberculosis," it is asserted, "notably declined during the war. In 1913 the new cases of tuberculosis had numbered 117,000, but they never reached the six-figure level again, and in the first year after the war they were down to 77,000." Now, apart from the fact that 1913 was the first year in which notification of all forms of tuberculosis became compulsory in this country—with the consequence that the figure was swollen by arrears and therefore partly fictitious—notification figures are not generally accepted as providing an adequate estimate of trends of tuberculosis. As pointed out by Sir Arthur MacNalty, "The mortality figures are a much more trustworthy guide, and in almost all cases the incidence of the disease has had to be measured by its death rate."

Up to 1914 the death rate from tuberculosis in England and Wales for all ages taken together had been steadily declining, but during the war the decrease gave place to a material increase in mortality, the decrease being resumed after the termination of hostilities. Over the decade that included the war period the standardized death rates per 100,000 living were: 1911, 146; 1912, 136; 1913, 134; 1914, 135; 1915, 144; 1916, 142; 1917, 148; 1918, 154; 1919, 123; 1920, 112. The total deaths from tuberculosis during the years 1914–18 were 20,000 to 25,000 in excess of those expected on the assumption that the 1913 death rate had been continued throughout. The war-time rise particularly affected young women, whose mortality from pulmonary tuberculosis reached in 1918 a figure as high as it had been about 1890.

The increase in tuberculosis during the last war involved most of the belligerents and also some neutrals, such as Holland and Switzerland, and a considerable literature has arisen on the subject. The worst effects were in Germany and Austria (to which attention was drawn in an editorial of this *Journal*), where the food restrictions were the most extreme. It has been estimated that Germany lost an extra 280,000 civilian lives from tuberculosis as a result of the war and subsequent economic depression (1914–27); this works out as one person for every ten fatal military casualties. The increased mortality both in belligerent and in neutral countries was mainly among the civilian population, and was greater among women than among men. The worst year of all was 1918, and there was a great fall in most countries when peace was restored.

In the report of the Chief Medical Officer of the Ministry of Health for 1920 the causes to which the increase in tuberculosis mortality during the war were generally ascribed were stated to include underfeeding or lack of particular foodstuffs, greater industrial employment of women, and the general outbreak of influenza—to which possible causes must be added overcrowding due to shortage of fuel. What is the outlook for the present war? An American authority has suggested that "all in all, it is a foregone conclusion that the excellent record of diminishing death rates that has characterized the last few decades will suffer a serious setback in the warring countries during the current and impending struggle, even if we are spared so devastating a visitation as the influenza pandemic of 1918–19." Let us hope that this prognostication will not be fulfilled, and that the serious attention being devoted to the problem of tuberculosis in war time will avert the increases that in fact occurred during the years 1914–18.—I am, etc.,

London, N.W.1, Dec. 18. P. D'ARCY HART.

BIBLIOGRAPHY

Annual Report of the Chief Medical Officer of the Ministry of Health, 1920, p. 79; 1930, p. 240.
Beveridge, W. (1928). *British Food Control.*
Biraud, Y. (1930). *Rev. Phthisiol.*, **11**, 37.
British Medical Journal, 1920, **2**, 829.
Burnet, E. (1932). *Quart. Bull. Hlth. Org. L.o.N.*, **1**, 489.
Cobbett, L. (1930). *J. Hyg., Camb.*, **30**, 79.
Lee, W. W. (1931). *Amer. Rev. Tuberc.*, **24**, 326.
MacNalty, A. S. (1932). Ministry of Health Reports on Public Health and Medical Subjects, No. 64, p. 3.
Metropol. Life Insur. Co. Statist. Bull., 1939, **20**, No. 9, 6.
Registrar-General's Statistical Review of England and Wales for 1937, Tables, Part 1, Medical, p. 43.

Administration of A.R.P. Casualty Services

SIR,—In your issue of November 18 (p. 1021) Dr. H. Mainwaring Holt raises many points of interest and instruction regarding the A.R.P. casualty service. Unification between voluntary and municipal hospitals and first-aid party stations is a necessary condition for the efficient working of the treatment scheme. Concerning training, we have found it desirable to establish, so far as possible, a uniform course for the personnel at the first-aid posts, consisting of lectures in first aid, in the medical treatment of gas casualties, and in the theory and practice of nursing. These lectures are given in a central depot, to which the nurses are brought, for one and a half to two hours each weekday. Exercises are also held at the posts in which the first-aid parties and the ambulance section take part, and casualties of various types are treated and decontaminated. Volunteers are notified when exercises are to be held, and are encouraged to take part in the work of dressing, undressing, decontamination, and in the supervising of patients in the rest rooms. The presence of the medical officer attached to the post at these exercises helps considerably in convincing the volunteers that they themselves have a part to play in the scheme.

It is a question as yet unsolved whether it is advisable to depend on volunteers for the majority of the work done in the posts. The response to this need must vary from place to place, depending on the social responsibility of the population, their educational level, and also on the congestion of the area. It would seem that a trained nurse is necessary, perhaps all the time, or, if this is not possible, for her to be within call in case of emergency. Continuous staffing, even on a small scale, would seem to be a necessity, and this could be implemented by further auxiliaries or volunteers when a raid occurred. It is inconceivable that a first-aid post could be closed for days or weeks and reopened at an hour's notice so as to be in a condition for duty. The mobile units in urban areas are intended to supplement posts already in being, and where they are called upon to occupy separate buildings these are in addition to the permanent first-aid posts at work.

It is undesirable for medical officers to accompany first-aid party personnel to decide the disposal of casualties on the streets; they are needed in the hospitals and the posts. The first-aid men on the streets may not be at such a disadvantage in deciding where to send casualties. They are provided with powerful battery lamps, and should be able to decide whether a patient may be assigned in the first place to the categories of "walking wounded" or "stretcher case." They are instructed that the former comprises cases of skin contaminations, abrasions, contusions, minor lacerations and haemorrhages,

and fractures of the upper limb, and that "stretcher" cases (intended for hospital) comprise patients suffering from lung irritation, fractures of the lower limbs, spine, pelvis, ribs, and skull, and generally those who are not able to assist themselves.

The experience of the hospitals in the larger cities during the Spanish Civil War has tended to show that first-aid posts were not of great use and that patients were better brought direct to hospital. This is more satisfactory when the number of casualties at one time is not great. We cannot presume that aerial bombardment, if this is attempted on a large scale, would result in such relatively small numbers as occurred in Spain; they are likely to be much greater from the force of armament engaged. In such circumstances first-aid posts are likely to be of value in relieving hospitals of the minor casualties. In this respect a first-aid post adjacent to a hospital is of value.

In the matter of decontamination of the skin first-aid posts are likely to be of great use. Hospitals are hardly to be expected to tackle a problem which is essentially a hygienic one. Eye irrigation is another matter. The skill of first-aid personnel in irrigation of a number of patients and for the requisite time is still untested. Decontamination of severely injured patients cannot be attempted under the usual sprays and is perhaps better performed by the nurse at a sink, with running water and the necessary bleach cream, soap, and sponge. Such shocked patients will need to be handled with great care, but will require washing before their injuries can be attended to in order not only to safeguard themselves but to avoid contamination of the nursing staff.

Lastly, the first-aid post will perhaps perform yeoman service in resuscitation by providing rest, quiet, and liquid stimulant to the lesser-injured patients, and reassuring the highly excited and hysterical by offering encouragement and exhortation to their sense of duty, in a department designed for their help.—I am, etc.,

JOHN SCULLY, M.B., Ch.B., D.P.H.,
Medical Officer in Charge of First-aid Posts,
for Medical Officer of Health.

Salford, Dec. 11.

Sedatives for Nervous Casualties

SIR,—The Emergency Medical Service memorandum issued by the Minister of Health dealing with the treatment of neuroses suggests morphine (gr. 1/4) by hypodermic injection, or preferably an intramuscular injection of sodium phenobarbitone (gr. 1½) combined with hyoscine hydrobromide (gr. 1/100), for restless or excited patients. Immediately following the above recommendation the memorandum (*British Medical Journal*, December 16, 1939, p. 1201) continues: "It may not be possible to retain these patients for long in aid posts and smaller medical establishments, but every effort should be made to return them to their homes if they improve sufficiently to do so with safety."

The passage quoted surely does not refer to patients who have had a potent sedative administered such as morphine or hyoscine, although the sequence creates that impression. It would scarcely be advisable or possible to send a patient home within twelve hours of receiving such treatment. It would necessitate the provision of accommodation for such cases at the aid post, or, alternatively, arrangements for sending them to hospital. A diagnosis would yet remain to be made, and a further period of hours would thus have to elapse before one could be reasonably certain that retardation, varying degrees of stupor, confusion, etc., were in fact psychiatric in origin and not toxic (due to after-effects of potent hypnotic drugs). Much delay and congestion would accordingly be occasioned by their use.

The barbituric acid group of preparations, on the other hand, have much to commend them for the immediate treatment and management of restless and excited cases. Evipan and pentothal sodium have been found most useful for this purpose. Readily administered, promptly effective, rapidly eliminated, therefore short-acting, there are virtually no contra-indications, and idiosyncrasy is rarely encountered. Most practitioners can recall cases in which morphine has failed to produce the effect desired, but very few indeed have had that experience with evipan. I have only encountered resistance to the drugs of the barbituric acid group in severe cases of alcoholism and drug addiction.

The rapid intravenous injection of 5 c.cm. of evipan will produce a period of unconsciousness varying from half an hour to several hours, which is followed by a period of post-hypnotic calm. The case can be investigated psychologically during this latter phase, a diagnosis facilitated, and treatment given—for example, interpretation and suggestion. A period of unconsciousness may not be considered necessary, in which event the slow administration of the injection will induce a hypnotic state during which good contact can be made with patients who earlier were psychologically inaccessible. The intravenous route allows maximum control. The response to the drug is immediate, and if an excited patient can be calmed with a small dose then obviously an advantage is gained. Patients who have received as much as 10 c.cm. of evipan have been able to drive motor cars within three hours with perfect control. Others may take somewhat longer to recover from the effects, but it is to be anticipated from my experience that the longest recovery period after evipan would be materially less than the normal recovery period following injections of morphine and hyoscine.

Dr. Maurice Wright in the *Journal* of September 9 (p. 578) writes: "I have myself worked at a fugue case for many months in a very intelligent man of the officer class, only to find out in the end that he was a true malingerer with no loss of memory at all." This suggests a further advantage in using the barbituric acid derivatives in the treatment of war neuroses, as cases of malingering can be readily detected in one short interview on account of the inability of a person to maintain a consciously concocted account of his symptoms or a studied and rehearsed imitation of a neurosis while in a hypnotic state.

The treatment of psychiatric casualties has been the subject of much discussion since hostilities began, and the management of cases which fail to respond to the simpler therapeutic measures constitutes a problem which may become acute at any time.—I am, etc.,

London, W.1, Dec. 18. ELLIS STUNGO.

Black-out and Ventilation

SIR,—Dr. E. J. Thomson's letter (*Journal*, December 2, p. 1116) raises a very important subject with regard to adequate ventilation of hospitals during present black-out conditions. Some hospital authorities have installed electric fans with the object of blowing fresh air through the building, but obviously this must be rather costly. A method which I have found to be both effective and relatively cheap is to have suitable-sized fibro-plastic vents made and fixed in key positions throughout the hospital. These vents are easily fixed in place of existing glass fanlights or fitted to the top of any window in such a manner that it is still possible to open or close top of window. Normally the window would be kept in the open position. The size of the vents would depend on size of window and the amount of ventilation required.

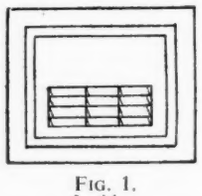


FIG. 1. Inside.

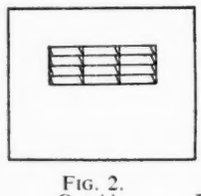


FIG. 2. Outside.

Fig. 3. Vertical section

The principle is simple and it is, of course, quite lightproof. Curtains are fixed below the inside vents, consequently air is free to pass into the room without any draught even in the roughest weather. The vents were designed and produced by the Sussex Plastering Co., Brighton.—I am, etc.,

V. ST. GEORGE VAUGHAN,
Medical Superintendent, Eversfield Chest Hospital.

St. Leonards-on-Sea, Dec. 7.

Medical Education in War Time

SIR,—Your Special Correspondent (*Journal*, December 9, p. 1155) is apparently unaware of the work being done at the West London Hospital Medical School. For the information of any of your readers who may share your contributor's ignorance I should be glad if you would allow me to state briefly the present position here.

We have forty-five students (thirty-four women and eleven men). All of these are working at the hospital with the exception of those attending the practical midwifery course at the West Middlesex County Hospital. While appreciating that certain advantages may accrue from a distribution of students in the sectors, as pointed out by your correspondent, I count this school fortunate in being thus able to preserve its corporate life—a not unimportant aspect of medical education. The number of beds is, of course, curtailed, but the reduction is partially compensated by a more rapid turnover of cases. All the out-patient departments, special and general, are in operation and clinical facilities are available at two adjacent L.C.C. hospitals. All the usual courses of lectures are being held.

At the time of writing we are still without our pathological department, which was closed under the Emergency Medical Service arrangements at the beginning of the war. I am hopeful, however, that this one defect in our teaching arrangements may be remedied by the New Year.—I am, etc.,

MAURICE E. SHAW,
Hammersmith, W.6, Dec. 11. Dean.

Relapses after Sulphonamide for Gonorrhoea

SIR,—I am interested in the article by Mr. A. J. Cokkinis and Dr. G. L. M. McElligott in your issue of December 2 (p. 1080).

One would think that if their somewhat depressing figures of the percentage of relapse after sulphonamide treatment approximate to the truth for the whole country the incidence of fresh cases would be steadily increasing since the introduction of the new treatment, as so many apparently cured gonococcus carriers at large among the community would be spreading the disease. That this unhappy result has not occurred must be due either to unusual self-control among the sufferers or to better experience in the number of relapses in other parts of the country. The proportion of relapses in this clinic has not been finally elucidated, as some improved methods of treatment have recently been introduced.

For the past three months an alkali (10 grains of sodium bicarbonate with each gramme of sulphapyridine) has been given throughout the treatment with a view to increasing the absorption of the drug, so that a smaller dose may be more effective. It has been found that 3 grammes daily for seven days clears up the great majority of cases and early relapses have been very infrequent. Of course the incidence of late relapses cannot as yet be estimated. Incidentally, the use of the bicarbonate appears also to have prevented gastric disturbance, which was fairly frequent before its introduction.—I am, etc.,

A. MURRAY STUART,
Medical Officer i/c,
Portsmouth, Dec. 19. V.D. Treatment Centre.

SIR,—I should like to congratulate Mr. A. J. Cokkinis and Dr. G. L. M. McElligott most sincerely on their paper in your issue of December 2, and also to state that I agree in every way with Dr. Neville Mascall's letter (December 16, p. 1204). One's experience of the increase in the defaulter rate since the institution of sulphonamide treatment would appear to be similar to that found by the early workers in the routine use of N.A.B. for syphilis—namely, that the disappearance of symptoms leads to a neglect of adequate treatment and observation and to a false sense of security. I concur also with Dr. Mascall's emphasis on the importance of the complement-fixation test for gonorrhoea in assessing "tests of cure." I should, however, add that in my opinion it is essential that the complement-fixation test be carried out in a laboratory where the technique of the test is in regular use, for by this means the personal factor in the reading of the test is reduced to a minimum. We have found at the London Lock Hospital that tests reported from laboratories where such work is rarely done are not dependable. The clinician must be prepared to re-examine a patient on whom the pathologist has reported a positive test, and will then be surprised to find how frequently he or she has overlooked a complication such as an early salpingitis. It is time that we clinicians realized that we may be saved from many mistakes by the habit of consulting with our colleagues the pathologists.

Although I have not yet collected sufficient data, I believe that Dr. Mascall's suspicion of the recent increase in "gonococcal carriers" will prove to be correct.—I am, etc.,

London, W.1, Dec. 18. GLADYS M. SANDES.

Personal Experience of Fractured Femur

SIR,—On August 26 of this year, while on leave in Newcastle-upon-Tyne, England, I fell a distance of about ten feet on to a stone kerb. My right great trochanter struck the edge and I felt the femur break. The pain was excruciating, but after a quarter of an hour I was able to get into the house, using two brooms as crutches. Later on in the day I was admitted into the Leazes Hospital under the care of the surgeon in charge of the orthopaedic department of the Royal Infirmary (Mr. Gordon Irwin), who, with that loyalty which medical men always show to their brothers in distress, came through from his week-end holiday in Cumberland specially to see me on Sunday, the 27th. *X*-ray examination on August 28 confirmed the diagnosis of fracture of the neck of the right femur, and on the 29th Mr. Irwin inserted a Smith-Petersen pin into the neck of the bone. Progress after operation was uninterrupted. I left hospital on September 3 (the day war broke out), was up on crutches on September 8 (eight days after operation), and sat up at table on September 9. One crutch was discarded on September 12 and the second on September 16, a stick being subsequently used to assist walking.

On September 21 I visited Edinburgh, driving a car part of the way there and back, and was examined by the consulting physician to the Colonial Office, Lieutenant-Colonel W. Glen Liston, and was passed as fit to return to duty to Nigeria after October 13. The remainder of my leave was spent in gardening (digging) to gain strength in my leg, and before leaving Newcastle for Liverpool on October 16 I walked a distance of five miles to test the leg out. *X*-ray examination showed the pin in excellent position, and Mr. Irwin passed me as fit. There was no shortening of the leg. As I had three days to wait in Liverpool before the ship sailed I visited the Royal Infirmary to see Mr. Watson Jones perform this operation. After seeing the *x*-ray films of my femur he described my result as perfect.

I resumed duty in Nigeria on November 8 and can walk well. I have no pain at all and my leg is now 95 per cent. normal—that is, just twelve weeks after operation.—I am, etc.,

Nigeria, Dec. 2. E. C. BRAITHWAITE.

Follicular Reticulosis

SIR,—The paper by Dr. Joan M. Ross in your issue of November 25, entitled "Classification of Non-infective Enlargement of Lymph Nodes," included a description of the condition known as follicular reticulosis. Noting that only about forty-five cases of the disease have been described I thought it would be of interest to your readers to know that we have such a case in the London Homoeopathic Hospital at present.

He is a man aged 47, employed by the L.C.C., who was admitted on November 29 as a possible case of Hodgkin's disease. He complained of swollen glands in the neck, armpits, and groins of about five years' duration. He also had swelling of the leg of four months' duration, with sciatic pain for two months. His previous history included trouble in the apex of the right lung when 18, which took the form of a general debility; an indefinite history of nervous indigestion; several attacks of influenza; a wrist abscess in 1923; and boils and carbuncles five years ago, after which the present trouble started. He had recently suffered from lassitude and increased nervousness. The family history revealed

the possibility of tuberculosis on his mother's side, and of his three sisters one had an illness that might be tuberculous, while the other two were not robust.

On examination it was found that he had enlarged, solid, discrete, freely movable glands in the neck and axillae. The neck glands included one to the left of and just below the occipital protuberance. There were similarly enlarged glands in both groins and a mass of glands in the left iliac fossa at a higher level which were not so freely movable. These were somewhat tender and appeared to be embedded in the pelvic fascia. Abdominal examination revealed the liver to be palpable at the costal margin, while the spleen was grossly enlarged and appeared to occupy the entire epigastrium, extending down the left flank and to the umbilicus. Its edge could easily be felt on inspiration.

The patient's blood count showed a red cell count of 4,900,000; 98 per cent. haemoglobin; and 8,650 white cells, of which there were 67 per cent. polymorphs, 1 per cent. eosinophils, 1 per cent. basophils, 4 per cent. large mononuclears, and 28 per cent. lymphocytes. The blood sugar and blood sedimentation rate were within normal limits. Mantoux and Wassermann tests were negative. An *x*-ray film of the chest revealed no abnormality of the lung parenchyma and no enlargement of the hilar glands.

Biopsy of one of his left inguinal glands revealed a follicular reticulosis. The lymph nodes were seen to be hypertrophic, but there was no excessive fibrous tissue deposition. There was no evidence of Hodgkin's disease, lymphosarcoma, or tuberculous disease. Since admission the general condition of the patient has been quite good. He developed oedema of the left leg, presumably due to obstruction of the venous return by the enlarged glands, but this has now subsided. There is so far no evidence of effusion into the serous cavities. I should like to acknowledge my indebtedness to Dr. Joyce Peake and Dr. J. D. Kenyon for their permission to report this case.—I am, etc.,

London, W.C.1, Dec. 21. ERNEST HOPE LAMB.

Treatment of Varicose Ulcers

SIR,—I have been interested to read the various opinions about the treatment of varicose ulcers. I agree that practically all varicose ulcers can be cured by rest in bed, if the patients can afford time to stay there, but in my experience they never can—or at any rate never will. Some ambulant cases get rapidly well under elastoplast dressings; upon others it has no effect for the better at all.

I have recently, however, applied tannic acid jelly—I use tannex—the burn dressing, to these ulcers with promising results. I put a thin smear of jelly on the raw surface and allow it to dry on. This takes about an hour. Then I cover it with a light gauze dressing and an elastic webbing bandage. Patients say that the tannic acid jelly relieves them of any pain at once and is most comfortable. This only needs dressing twice a week, though the bandage is taken off at nights. Any accumulation of discharge can be gently expressed from beneath the scab daily, and healing seems to be very rapid.—I am, etc.,

Watlington, Oxford, Dec. 17. T. L. CRAWHALL.

The completion of the new Dental Department marks an important step in the Dental School of King's College Hospital, which, since its foundation, had had the use of one of the hospital wards. The removal of the department from this ward, contemplated some time ago, was hastened at the outbreak of war by the need to provide more beds for air raid casualties, should such an emergency arise. The new building will be primarily concerned with conservative treatment and the instruction of students. In declaring the department open Sir Frank Pearce, consulting dental surgeon to Guy's Hospital, said that although its Dental School was only opened in 1923, King's College Hospital already had a great dental tradition, begun by Sir John Tomes, whose lectures and writings had a profound effect on the practice of dentistry not only in this country but wherever dental surgery was practised; the tradition was continued by Samuel Cartwright, Ashley Gibbings, Arthur Underwood, and C. E. Wallis. The combination of medical and dental education under practically one roof, and in many cases by the same teachers, would be beneficial to future dental surgeons and was, in his opinion, no less important for future physicians and surgeons.

Obituary

PROFESSOR VON EISELSBERG

Professor Grey Turner writes from the British Postgraduate Medical School, London:

I should like to add a brief British tribute to the memory of that great surgeon Anton von Eiselsberg. I have the most vivid recollection of a visit to his clinic with the Surgical Club in April of 1912. I think what struck me more than anything else was the extraordinary contrast between conditions then and what I had seen during a previous stay in Vienna in 1899. At that time there were active surgical departments, but they were living on great traditions, and there seemed to be very little consideration for the individual patient. In the von Eiselsberg Clinic things were entirely different, for the great master was kindness itself to all those who came under his care, and had the greatest consideration for their every welfare. One instance especially remains in my memory. At that time Eiselsberg was recognized as a pioneer in the surgery of the pituitary, and he showed us some patients on whom he had operated for the removal of tumours by the nasal route. There was a most suitable case for operation in the clinic, and the patient was demonstrated to us, and we were extremely anxious to witness the operation. At the same time von Eiselsberg was most desirous to show us what he could, but as the patient was suffering from a slight cold he felt that the risk of infection would be greater than ought to be undertaken, and the operation had to be postponed until some time after our visit. I am sure that it was as great a disappointment to the professor as it was to his visitors, but he would not allow himself to be persuaded to do anything that might be detrimental to the welfare of the patient, and I shall always regard the incident as a fine example of surgical restraint. But to make amends von Eiselsberg demonstrated the steps of the operation on the cadaver. This was conducted in a sort of subterranean cellar, and I recall that we seemed to walk a very long way along devious corridors to a queer little out-of-the-way place where everything had to be done in artificial light. None the less, the conditions of the actual operation were closely followed, and he used all the special instruments which he had devised. Even on the cadaver it was a beautiful piece of workmanship.

But during our stay we saw a great deal of his operative work and many of the after-results, and were much impressed by his manifold activities over a wide field, for he was a great general surgeon. He appeared to be untiring, and with much else to see and to do in the happy care-free Vienna of those days we found it difficult to take advantage of all the opportunities with which he provided us. Clairmont, now of Zurich, was his first assistant, and I believe poor Ranzi was also on his staff, and it was delightful to notice the pride in their work shown by the professor and the opportunities he gave them for demonstrating their own methods. There was no sign of jealousy or officious superiority. But long after they left his service his assistants continued to look to him for inspiration and advice, and in turn he took an abiding interest in their welfare and activities. When I next saw him at work in 1929 he was nearly 70 and just about to retire from the chair. The war and after the war had profoundly affected him, and the buoyancy of former times was no more, but he was operating and regularly at work in the clinic, and with the same gentle solicitude for the welfare of his patients. It is only a couple of years ago since he published his autobiography under the title of *The Life Story of a Surgeon*.

Von Eiselsberg received many honours, and in 1913, at the time of the last International Medical Congress in London, he was admitted an honorary Fellow of the Royal College of Surgeons of England, and he was also an honorary Fellow of the Royal Society of Medicine and a Foreign Corresponding Member of the British Medical Association.

We regret to announce the death on December 16 at Lahore of Dr. JAMES CAIRNS, C.I.E., O.B.E., chief medical and health officer to the North-Western Railway of India and honorary

president of the Punjab Branch of the British Medical Association. He was the only son of the late Bailie James Cairns of Holyrood Crescent, Glasgow, and graduated M.A., M.B., Ch.B.Glas. in 1909. He obtained the D.P.H. of Cambridge in 1914 and the D.T.M. and H. of the English Conjoint Board in 1931. Dr. Cairns was acting M.O.H. for Bombay in 1919 and for some years held the post of principal medical and health officer to the G.I.P. Railway before his appointment to the North-Western Railway. He joined the Glasgow and West of Scotland Branch of the B.M.A. in 1923, was vice-president of the Punjab Branch in 1935–6, and president in 1936–7, and represented the Branch at the Belfast Annual Meeting in 1937.

Readers in Auckland (N.Z.) will learn with regret that Dr. ARTHUR W. T. F. MICKLE died at Harrogate last month at the age of 85, after a trying illness cheerfully and patiently borne. The youngest son of the late Dr. David Mickle of Kirklington, Yorks, he belonged to the Lister era and qualified in Edinburgh with the L.R.C.S. and L.M. diplomas in 1877. He obtained the degrees M.B., C.M. of the University in Edinburgh in 1882 and proceeded M.D. in 1894. After holding house appointments at Edinburgh and Dundee he took several asylum appointments, and then for some years was in general practice in London. Finally he went to New Zealand and practised for many years in Auckland. "R. W. P." writes: Dr. Mickle loved that sunny island and its people, and must have been dearly loved in return. For family reasons he returned to England about eight years ago, when I first met him. He was so youthful in spirits and looks, so kindly, so simple in heart and tastes, and these qualities with his quiet good humour and his keen interest in medicine and travel and politics made up a singularly attractive personality and a fine old English gentleman.

The Services

DEATHS IN THE SERVICES

Deputy Surgeon General WILLIAM TAIT, R.N. (ret.), died at Alverstoke on December 13, aged 84. He was educated at the University of Edinburgh, where he graduated M.B., C.M. in 1878. He entered the Royal Navy soon after qualifying, attained the rank of deputy surgeon general on October 10, 1906, and retired on May 6, 1913. He served as surgeon on H.M.S. *Temeraire* during the Egyptian war of 1882, receiving the medal and the Khedive's bronze star. Later he served as medical officer of the gunboat *Lily* when she was wrecked on the coast of Labrador in 1889, and on H.M.S. *Cleopatra* in 1894, when she landed a party at Bluefields, Nicaragua, for the protection of the inhabitants during a rebellion. He was the author of *The Cruise of the Cleopatra* and of a *History of Haslar Hospital.*

Lieutenant-Colonel WILLIAM LINCOLN BAKER, R.A.M.C. (ret.), died suddenly at Ferndown on December 9, aged 63. He was born on December 2, 1876, and was educated at St. Mary's Hospital, taking the M.R.C.S., L.R.C.P. in 1899. He entered the Royal Army Medical Corps as lieutenant on April 25, 1900, became lieutenant-colonel on December 26, 1917, and retired on April 20, 1920. He served in the South African War of 1899–1902, when he took part in operations in Cape Colony, Orange River Colony, and the Transvaal, and received the Queen's medal with three clasps and the King's medal with two clasps.

Lieutenant-Colonel GERALD AINSLIE KEMPTHORNE, D.S.O., R.A.M.C. (ret.), died suddenly, after an operation, on December 4 at St. Austell, aged 66. He was born on May 10, 1873, and was educated at the University of Cambridge, where he graduated B.A. in 1898, and at St. Thomas's Hospital, taking the M.R.C.S., L.R.C.P. in 1902, and later the D.P.H. of the London Colleges in 1913. After acting as house-surgeon at the Derbyshire Royal Infirmary he entered the Royal Army Medical Corps as lieutenant on August 31, 1903, became lieutenant-colonel on June 3, 1926, and retired on May 10, 1931. He served in the war of 1914–18, when he was twice mentioned in dispatches and received the D.S.O.

Universities and Colleges

UNIVERSITY OF OXFORD

C. Ounsted (Christ's Hospital) has been elected to a War Memorial Medical Scholarship of £100 at University College.

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated:

FINAL M.B.—*Part I* (*Surgery, Midwifery, and Gynaecology*): G. A. Ballance, E. D. Barlow, M. W. Bird, T. R. M. Bristow, P. P. Brown, B. D. Burns, J. C. K. Campbell, G. K. F. Cohen, J. G. Craddock, R. W. Danziger, R. V. Dent, W. R. B. Dickinson, J. A. Elliott, M. A. Fawkes, J. H. P. Gauvain, M. J. Greenberg, T. S. S. Gregory, M. H. K. Haggie, R. T. Hastings-James, K. M. Hay, R. C. Howard, J. H. Humphrey, R. R. Hunter, T. B. Hutton, J. D. H. Iles, R. C. Jack, J. H. Jacobs, D. W. M. James, E. E. Jones, J. Joyce, J. H. Keesey, T. A. Kemp, J. D. Kidd, H. P. König, J. A. N. Lock, B. C. H. Luker, G. T. B. MacKinnell-Childs, W. B. D. Maile, J. E. M. Melville, R. S. Monro, R. Morton, T. L. Oliver, A. Ponder, A. G. Porter, W. L. Price, J. M. Pullan, H. Rabinowitz, J. F. Roberts, D. Scott, J. F. Smith, N. Southwell, G. E. Spear, P. N. Stanbury, G. E. Stein, R. E. Symes-Thompson, J. R. Tasker, A. C. Thackray, C. C. Thomas, G. T. G. Thomas, P. D. Trevor Roper, H. D. S. Vellacott, F. A. Whitlock, H. H. Wolff, M. W. W. Wood. *Women:* J. J. H. Beattie, M. K. Cole, M. C. Simpson.

UNIVERSITY OF LONDON

At a meeting of the Senate, held on December 20, the William Julius Mickle Fellowship for 1940 was awarded to F. G. Young, D.Sc., Ph.D., and the degree of D.Sc. was conferred on T. C. Angus, a recognized teacher at the London School of Hygiene and Tropical Medicine.

UNIVERSITY OF MANCHESTER

The following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—Peggy Anderson, A. P. Bates, D. Bolchower, R. Cocker, Barbara H. Fiddian, P. Haslam, J. E. Horrocks, E. Lee, D. Livshin, A. Manch, A. S. Ogden, J. C. Ramsden, J. C. A. Renshaw, G. G. Robertson, W. P. Sweetnam, H. E. Thackray. *Part I:* Eva Abrahamson, I. C. Campbell, A. C. C. Davey, Elisabeth J. Davy, I. Dickson, W. Dickson, H. Diggles, J. W. Emerson, G. R. Ferguson, L. A. Gifford, B. L. Hoffmann, E. W. Jones, F. T. Jones, G. Lancaster, F. L. R. Makin, A. Manch, H. Walmsley, Mary J. Walmsley, C. S. Williams.

THIRD M.B., CH.B.—*Pathology and Bacteriology:* E. P. Abson, R. G. Balf, J. Ball, J. K. Brown, D. M. Coates, B. O. Dowdell, Jeanne M. Edwards, E. Feinmann, A. Glass, J. C. Greenwood, P. G. Griffiths, *E. G. Hall, *Frances A. Hepburn, S. H. Jackson, R. P. Jepson, J. D. Johnson, H. Khazam, M. Levinson, N. A. Lewtas, D. C. Little, J. K. McMyn, F. S. Mooney, A. B. Morrison, T. E. Parry, S. S. Rose, Susanne M. Seligsohn, G. J. Shanklin, H. G. B. Slack, J. Thompson, D. H. M. Titcombe, Vera Waine, F. R. Wilde, L. Wise, B. Wolman, P. B. Woolley. *Pharmacology:* G. Ashe, A. N. Ashworth, Shirley G. Barrett, H. Bolton, D. M. Brierley, W. E. Broughton, P. Cliff, J. G. Coburn, J. A. L. Cooper, D. G. Crawshaw, Betty J. Dakin, Sheila Egan, D. Eglin, C. J. L. Elsdon, Nora F. M. Falk, S. Falk, A. I. Goodman, S. Grace, K. Heap, Mary W. P. Huddart, Esther Jackson, H. Lempert, R. L. Lunt, Elspeth M. McKechnie, C. W. Marsden, R. W. T. Mason, Eileen T. Sloane, H. F. Smith, *S. W. Stanbury, O. C. Sugden, D. Sutton, M. Swerdlow, R. H. Townshend, H. C. Warrington, J. Whewell, J. K. Wright.

* With distinction.

NATIONAL UNIVERSITY OF IRELAND

UNIVERSITY COLLEGE, CORK

The following candidates have been approved at the examinations indicated:

M.CH.—W. F. Whelton.

M.B., B.CH., B.A.O.—*J. B. Kearney, *P. J. Pugh, M. Bennett, M. A. Carroll, T. F. Coleman, J. J. Hennessy, J. P. Kenefick, T. McCracken, J. B. McKenna, Kathleen M. McSwiney, Anne M. Madden, J. J. Mockler, P. J. Murphy, W. P. Navin, Mary L. Neville, D. J. O'Callaghan, Nora T. U. O'Callaghan, J. S. O'Dwyer, W. P. O'Neill, D. P. F. O'Sullivan, J. V. O'Sullivan, J. A. A. Ryan. *Part II:* Winifred P. Fielding, W. P. Lee, T. Nunan, I. Tully.

D.P.H.—*Part I:* D. C. Lawton.

* With first-class honours.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the Royal College of Surgeons of Edinburgh held on December 18, with Dr. H. M. Traquair, President, in the chair, the following candidates, having passed the requisite examinations, were admitted Fellows:

Y. M. E. R. Abeyesundere, T. J. Brownlee, H. Cohen, K. Das, B. K. Das Gupta, J. Dickie, A. A. Douglas, M. P. Embrey, D. Engel, M. R. Ewing, W. L. Fulthorpe, W. C. Gledhill, W. Gray, R. F. H. Hinrichsen, H. G. W. Hoare, Sa'd. Khalil, A. G. R. Lowdon, Rosamund M. J. Mackay, A. Y. Mason, W. Michie, A. C. Miller, N. M. Mody, G. H. Moore, A. Naylor, P. G. Rau, F. H. Robarts, T. F. Rose, F. J. Rutter, C. G. Scorer, J. F. Sheehan, H. A. Thomas, R. N. Traquair, L. J. Woodland.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—E. J. S. Barthorpe, E. Batley, P. S. Clarke, S. J. P. Ras, E. A. Spouse.

MEDICINE.—D. S. Foster, E. G. F. Skinner.

FORENSIC MEDICINE.—D. S. Foster, E. G. F. Skinner.

MIDWIFERY.—R. S. Holtan, C. M. Isherwood, J. Marks.

The diploma of the Society has been granted to E. J. S. Barthorpe, E. A. Spouse, and E. G. F. Skinner.

Medical News

The council of Epsom College will shortly proceed to elect two or more St. Anne's scholars. Candidates must be fully 9 years of age and must be orphan daughters of medical men who have been in independent practice in England or Wales for not less than five years. The value of each scholarship is dependent upon the means of the applicant and the locality and fees of the school selected. Forms of application for the vacant scholarships can be obtained from the secretary at the secretary's office, Epsom College, Epsom, Surrey, and must be completed and returned by January 20, 1940, at latest.

No. 1 of Volume XI of the *Index to the Literature of Food Investigation* is published on behalf of the Department of Scientific and Industrial Research by H.M. Stationery Office at 4s. 6d. This issue deals with papers received between January 1 and December 31, 1939. Henceforth each annual volume will appear in four quarterly numbers.

The issue of *Schweizerische medizinische Wochenschrift* for October 28 is dedicated to Dr. Alfred Vogt, professor of ophthalmology at Zurich and founder of the Swiss Ophthalmological Society, on the occasion of his sixtieth birthday.

The forty-fifth volume of *Uppsala Läkareförenings Förhandlingar* is a *Festschrift* dedicated to Dr. Gustaf Fr. Göthlin, professor of physiology at Uppsala. Of the twenty-nine articles nine are in English and twenty in German.

Dr. Jörgen N. Schaumann, chief physician to the St. Görans Finsen Institute, Stockholm, is to be the recipient of a jubilee number of the *Acta Medica Scandinavica* on the occasion of his sixtieth birthday. His name has been given to a generalized disease of which the skin manifestations are lupus pernio (Besnier) and Boeck's sarcoid.

The thirteenth annual report of the "UFAW" (the Universities Federation for Animal Welfare) has been circulated to members; for reasons of economy it has been drastically reduced in size. Much of the work connected with expansion is hindered by the war, but many activities will be carried on. Sir Peter Chalmers Mitchell, D.Sc., F.R.S., has become president, in succession to the late Sir Frederick Hobday. In March last the offices of the Federation were moved to Gordon House, Gordon Square, W.C.1.

In 1938 New York had the lowest general mortality on record—namely, 10.8 per thousand inhabitants.

An academy of dermatology has recently been founded in New York, with Dr. Howard Fox of New York as president.

The King has granted authority to Dr. Leigh Hunt Henderson to wear the Insignia of Officer of the Order of the Nile conferred upon him by the King of Egypt in recognition of valuable services rendered by him in the employment of the Sudan Government.

A library devoted to the history of medicine has been established at Yale University School of Medicine. Its basis will be formed by the collections of the late Dr. Harvey Cushing and of Dr. John F. Fulton, professor of physiology in the Yale Faculty.

The King of the Belgians has raised Professor Corneille Heymans, the Nobel prizeman, to the rank of Commander of the Order of Leopold.

Queen Elizabeth of Belgium has been made a doctor *honoris causa* of the Medical Faculty of Montpellier.

Announcement is made of the admission by Dr. Barnardo's Homes of the 124,000th child to benefit under their Charter—"No destitute child ever refused admission." The family always numbers about 8,250 boys and girls—a figure that in the near future seems likely to be exceeded by reason of war conditions.

The German Medical Society of New York has had its name changed to the Rudolf Virchow Medical Society of the City of New York.

An Argentine Society of Social Medicine has recently been founded at Buenos Aires.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

Measles and typhoid fever are the only two important infectious diseases in England and Wales which have increased in prevalence during the week; in the former London has shared to some extent but not in the latter. The expected measles epidemic has been rather slower to appear than usual, but in recent years it has been observed that the biennial epidemics do not enter upon the explosive phase until the latter part of January, reaching the maximum in March, in London in the third week. So far the disease has been widely distributed over England and Wales, affecting rural areas as much as urban centres and avoiding the majority of large towns, including London. Notifications of enteric fever rose from 13 to 29; from eight counties more than one case was reported: Dorset 2 (both in Weymouth and Melcombe Regis M.B.); Hertford 3 (Barnet, St. Albans, and Hemel Hempstead 1 each); Lancaster 3 (Preston, Colne M.B., and Trawden U.D. 1 each); Norfolk 2 (Great Yarmouth 1, Blofield and Flegg R.D. 1); Northumberland 2 (Morpeth 1, Whitley and Monkseaton 1); Nottingham 2 (both in Sutton-in-Ashfield); Warwick 2 (both in Birmingham); Yorks (West Riding) 4 (Harrogate 2, Bradford 1, Denby Dale U.D. 1).

Although the figures for diphtheria have fallen during the week and are less than two-thirds of the level of last year, reports of a disquieting character have arrived from some centres. In Leicester county there were 27 cases, of which 11 were in the City of Leicester, compared with 31 and 13 respectively in the previous week—apparently a highly virulent strain, probably a starch-permeating or "gravis" type, as the response to serum treatment has frequently been unsatisfactory. Despite an intensive immunization campaign for nearly two years in South Shields cases continue, although usually they are mild or are in carriers. Up to December 9 there have been 476 cases in the town this year, making slightly over 100 fewer for the same period last year. In the Don Valley, in the administrative county of Yorks (West Riding), a severe type has appeared, especially in two districts—Ardwick-le-Street and Armthorpe—and 63 cases have recently been admitted to Conisborough Isolation Hospital, of which 4 patients died. In Sheffield there were 18 cases during the week, compared with 6 in Leeds.

No. 49

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended December 9, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1939 (a)	1939 (b)	1939 (c)	1939 (d)	1939 (e)	1938 (Corresponding Week) (a)	1938 (Corresponding Week) (b)	1938 (Corresponding Week) (c)	1938 (Corresponding Week) (d)	1938 (Corresponding Week) (e)
Cerebrospinal fever	27	4	6	1	2	25	1	13	2	2
Deaths		1	—				—	3		
Diphtheria	994	22	227	46	34	1,512	167	262	67	28
Deaths	26	3	11	3	1	26	—	7	4	—
Dysentery	50	3	28	—	—	44	6	20	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	2	—	1	—	—	2	—	—	—	—
Deaths		—	1				—	—		
Enteric (typhoid and paratyphoid) fever	29	1	5	10	1	24	5	1	10	—
Deaths	1	—	—	—	—	1	—	—	—	—
Erysipelas			58	12	7			85	7	5
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	29	3	7	7	2	36	15	16	10	1
Measles	2,225	20	11		47		10	11		1
Deaths	—	—	—	2	—	—	—	—	—	—
Ophthalmia neonatorum	86	8	24		—	77	9	17		1
Deaths										
Pneumonia, influenzal*	440	18	12	1	8	794	94	19	11	28
Deaths (from influenza)	23	3	—	—	2	26	—	7	1	2
Pneumonia, primary			146	17				368	9	
Deaths		9		8	6		11		24	10
Polio-encephalitis, acute	2	—				3	—			
Deaths		—					—			
Poliomyelitis, acute	4	1	—	—	—	27	2	1	—	—
Deaths		1	—				—	—		
Puerperal fever	2	2	11	2	1	3	3	18	2	1
Deaths		1†					—			
Puerperal pyrexia	128	4	16		—	163	18	21		—
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,233	37	179	45	102	1,943	166	347	49	73
Deaths	2	—	—	—	—	4	—	2	1	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,189	19	27		4		193	343		10
Deaths	2	—	—	—	1	10	1	3	—	—
Deaths (0-1 year)	290	42	48	34	8	299	64	74	30	19
Infant mortality rate (per 1,000 live births)						49	52			
Deaths (excluding stillbirths)	4,584	712	657	179	134	4,681	852	672	213	176
Annual death rate (per 1,000 persons living)			13.3	12.0	11.8	11.5	10.9	13.7	14.4	15.6
Live births	4,764	627	797	251	237	6,044	1,101	816	359	232
Annual rate per 1,000 persons living			16.1	16.9	20.8	14.9	14.0	16.6	24.3	20.6
Stillbirths	256	28	37			253	34			
Rate per 1,000 total births (including stillborn)			44			40	30			

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.
† Death from puerperal sepsis.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS.—All communications should be addressed to the Advertisement Manager (office hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Cumann Doctúirí na h-Eireann (I.M.A. and B.M.A.), 95, Merrion Square, W., Dublin (telephone 62550 Dublin).

QUERIES AND ANSWERS

Erythema of Eyelids

Dr. I. INMAN (Portsmouth) writes: Dr. W. A. Muir (December 16, p. 1214) gives scanty details for a long-range diagnosis upon which scientific treatment might be based, but may I make a suggestion? His treatment with antiseptics points to a belief that infection may be the cause. I invite his consideration of the possibility of a non-infective erythema due to vasomotor disturbance. The condition might then be compared with pathological blushing. If Dr. Muir will refer to the *Journal* of August 19 (p. 396) he will find an article by Mr. T. G. Wynne Parry on ocular reaction to foreign protein which may help him to understand how complicated the mechanism can be. It describes how a young woman developed serious eye disease (irido--cyclitis) usually attributed to septic processes from merely touching egg. The question how the egg operates is not discussed, but, since it is impossible to believe that absorption took place through the skin, the only channel through which it could act was the mind, through association of ideas. I dealt with this aspect of Mr. Wynne Parry's case in a letter to the *Journal* of September 9 (p. 582). If Dr. Muir is interested and will communicate with me I will send him some literature on diseases of the eyelids induced in a similar way.

Dr. SYDNEY TIBBLES writes: Dr. Muir might try calamine as a lotion or ointment for his patient's lids, as occasionally mercury is too stimulating. The skin of the lid is very tender, but is liable to the same complaints as that of the rest of the body. A rhubarb and magnesia mixture taken internally might help, as some cases are gastro-intestinal in origin.

Income Tax

Gifts Received from Patients

"M.D., F.R.C.S." has received numerous substantial gifts of money from patients in addition to the ordinary fees charged. Are such receipts assessable? If the authorities inquire by whom they were paid, can "M.D., F.R.C.S." plead professional privilege?

⁂ Various cases have been before the courts on the question of gifts (mostly in connexion with Schedule E), and the view is that each case must be considered on its own merits to decide whether the payments were made for personal or professional reasons. In the latter case they would in general be regarded as assessable. The fact that in "M.D., F.R.C.S.'s" case such receipts were numerous would suggest that the motive behind them was largely to recognize financially his professional services. The question is one of fact on which the judges are the Local or Special Commissioners—and not, for instance, the inspector of taxes—and "M.D., F.R.C.S." may feel that an appeal to them is justified in view of the amount of tax involved. Professional privilege would not seem to apply, but if "M.D., F.R.C.S." is willing to include a specific gift in his liability there would be no justification for requiring him to disclose its source.

LETTERS, NOTES, ETC.

Cod-liver Oil and Vitamin D

Mr. K. MACLENNAN, B.Sc., general manager of British Cod Liver Oil Producers (Hull) Limited, writes: I do not wish to seem ungenerous in my appreciation of the gesture made by a man with Professor Drummond's scientific reputation when he admits, as he does in your issue of December 2, that so far from cod-liver oil being displaced by any other fish-liver oil it still provides between three-quarters and five-sixths of the major supplies of this vitamin for human nutrition. But Professor Drummond must go much further than this. The table to which I first drew his attention (page 180 of his book) gives the vitamin D values of cod-liver oil as varying from 50 to 200 units of vitamin D per gramme. Both these figures are in error to the extent of no less than 70 per cent. in relation to what the public can possibly or readily obtain by ordinary purchase; in fact, the lower limit of 50 is in error to this extent as compared with the minimum limit, 85 D, imposed by the *British Pharmacopoeia* for the legal sale of medicinal cod-liver oil. The method by which Professor Drummond arrives at his drastically reduced estimate, one-quarter to one-sixth contribution by halibut oil, is somewhat obscure, but it obviously arises from the errors in his table and involves some use of the widely advertised fallacy, for which he is apparently responsible, that certain forms of fish-liver oil are some quite unverifiable number of times richer in vitamin D values than cod-liver oil. The plain truth is that, whether from the point of view of actual or potential British or world supplies or use, the amount of vitamin D from cod-liver oil is by comparison so great as to dwarf supplies from all other fish-liver oils into almost total insignificance for the needs of human or animal nutrition.

Test for Albuminuria

"BOARD EXAMINER" writes: Being No. 1 examiner on a medical board, whose duties include examination of the urine, I find very few men over 50 who know the salicyl-sulphonic acid test for albumin. Most of them either boil the urine or use the nitric acid test, both taking up a good deal of time in the process; whereas just one drop of the salicyl-sulphonic acid solution from a dropper bottle into the urine in a test tube, or the conical glass supplied, gives a cloudy precipitate at once if albumin is present. Of course the other tests could be made afterwards to confirm matters if in doubt. Also for sugar, if the urinometer in the same glass shows a specific gravity of 1015 or less one can give a rough guess that there is no glycosuria, omitting, of course, such cases as that of the diabetic who tried to diddle the doctor by injecting twenty-four units of insulin before coming up for examination.

Rheumatism and Climate

Dr. C. M. HEANLEY (Salisbury, Rhodesia) writes: It is gratifying to see Sir Leonard Hill writing on this subject in the *Journal* of August 5 (p. 276). Why is it that rheumatic fever with carditis is entirely absent from vast areas of the world which enjoy a particular type of climate? If we could answer this question it should help us in the fight against this disease. The causes mentioned in Sir Leonard Hill's conclusions—namely, dirty, ill-ventilated houses, density of population, and bad diet—are present in superlative degree in South China, but there is no rheumatic fever with carditis. There must be some preventive factor at work. Direct experiment is needed. If the ward was heated to about 85° F. and the humidity kept fairly high, would substances which cause the heart and joint lesions run away in the sweat? 85° F. can be quite pleasant if the humidity and clothing are right.

Disclaimer

Dr. E. J. THOMSON writes: My attention has been called to a re-hash, in a Sunday newspaper, of the letter you recently published about my light-trap (December 2, p. 1116). I should be grateful if you would make it known that this publicity is not of my seeking. I have made no communication concerning the device except to you and a few personal friends.

The illustrations to Mr. Timbrell Fisher's article on the semilunar cartilages in the *Journal* of December 9 were taken from his book *Treatment by Manipulation*, published by Messrs. H. K. Lewis and Co. Ltd. In our notice of the *Annual Review of Biochemistry* on December 16 "Volume III." was printed in error for "Volume VIII."